



Serving the automotive parts, accessories, tools and equipment industry in Australia



The Automotive Aftermarket Industry

Industry Guidelines for the Numbering and Bar Coding of Trade Items

Version 1.3



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These guidelines should be read in conjunction with the **GS1 Australia User Manuals**.

Disclaimer

Every possible effort has been made to ensure that the information and specifications in this document are correct, however GS1 Australia and the Automotive Aftermarket Industry expressly disclaim liability for any errors. In addition, no warranty or representation is made that this document will not require modification due to developments in technology or changes or additions to the EAN•UCC standard.



Acknowledgements

This Numbering and Bar Coding Guideline for the Automotive Aftermarket Industry was developed by GS1 Australia as part of the Automotive Aftermarket eCommerce Project.

Automotive Aftermarket Industry's eCommerce Project members include the following organisations:

• Auto Concepts	• Australian Automotive Aftermarket Association
• Auto One Australia	• National Parts
• Autobarn	• NGK Spark Plugs
• Bursons Automotive	• Robert Bosch
• GUD Manufacturing	• Septone Products
• Automotive Parts Group	• Super Cheap Auto
• Coventry Group Ltd	• MARK IV Automotive
• GS1 Australia	

How to Use this Guideline

This guideline has been written to assist companies with the implementation of the EAN•UCC standards throughout their business.

The document is divided into two parts:

PART 1: (SECTIONS 1-8):

This part provides a generic description of how to number and bar code trade items, attribute information and logistic units throughout the supply chain using the EAN•UCC standards throughout the entire Automotive Aftermarket Association Industry. Examples provided do not reflect all the different types of trade items available in this industry but the principles are the same regardless of the product type.

Part 2: (Sections 9-10):

This part describes specific examples highlighted by Automotive Aftermarket Association Industry sectors not the method of how to apply numbers and bar codes. This part should be read in conjunction with part 1.

The specific technical recommendations pertaining to the printing, size and location of the bar codes is not included within these guidelines. Companies should refer to the **GS1 Australia User Manuals** or contact GS1 Australia for further assistance.



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1 Introduction and Overview

The EAN•UCC standards originated in the United States and was established in 1973 by the Uniform Product Code Council, then known as the Uniform Code Council, Inc.® (UCC™). The UCC adopted a 12-digit identification number, and the first ID numbers and bar codes in open trade were being scanned in 1974.

Following the success of this U.P.C. System, the European Article Numbering Association, then known as EAN International, was established in 1977 to develop a compatible system for use outside North America.

The EAN System was designed as a superset of the UCC standards and principally used 13-digit numbers. As a consequence of using certain bar codes and data structures, the EAN•UCC System has expanded.

The historical development of the EAN•UCC System has seen it grow from a purely retail perspective to encompassing all components and aspects of supply chain management. As a result of this historical process, areas of the system require choices about the nature of the trade item, the expected scanning path through the supply chain etc. This should not be seen as a limitation nor a hindrance towards the use of the system more a realisation of the development and support of the system internationally.

The following information contains guidelines on how to number and bar code trade items using the EAN•UCC Standards for the Automotive Aftermarket Industry.

The versatility of the EAN•UCC Standard provides users with various numbering and bar coding options. It is left to the discretion of manufacturers and suppliers to decide which option is suitable to their business needs and those of their trading partners.

1.1 Who is GS1 Australia

GS1 Australia is a not for profit organisation that locally administers the global multi-industry system of identification and communication for products, services, assets and locations known as the GS1 System.

Created to help Australian business enterprises to become more efficient, GS1 Australia fundamental role is to allocate EAN•UCC numbers, maintaining internationally accepted trading standards. This in turn allows Australian organisations to adopt worlds' best practice supply chain management techniques.

EAN International and its partner organisation, the Uniform Code Council (UCC) in the USA, collaboratively developed the EAN•UCC standards. The system is recognised by the International Standards Organisation (ISO), the European Standardisation Committee (CEN) and The American National Standards Institute (ANSI).

Toady, around 900,000 member companies in 128 countries use the EAN•UCC standards as part of their daily business communications, representing over 5 billion scanning transactions a day.



1.2 The EAN•UCC standards

EAN•UCC numbers and bar codes permit organisations of any size to order, track, trace, deliver and pay for goods across the supply chain, anywhere in the world.

The EAN•UCC standards allows continuous improvement in e-commerce supply chain management practices by providing international standards for item identification, data capture, electronic messaging and data synchronisation. These standards are also being enhanced and expanded to reflect business needs and advances in technology.

Through the automation of business processes, the EAN•UCC standards drives increasingly fast, efficient and accurate flow of information between trading partners, factors that are fundamental to the success of any business.

Increasingly, corporate success is based, not on having the best product, but on having the best supply chain management practices.

An efficient supply chain allows companies to build better relationships with trading partners today, and ensures products and services achieve greater competitiveness and demand tomorrow.

1.3 Components of the GS1 System

The components that make up the GS1 system include: E-Messaging, GDSN, EPC and Bar coding/Numbering.

E-Messaging: EANCOM and EAN•UCC XML Standards for e-Messaging are based on the principle of the transfer of structured data, by agreed messaging standards from one computer application to another by electronic means and with a minimum of human intervention. The structure and data content are exchanged by agreed means by trading partners. The electronic exchange of data or e-messaging provides trading partners with an efficient trading tool for the transmission of data.

GDSN: The Global Data Synchronisation Network (GDSN) is a concept developed by various industry groups, including Global Commerce Initiative (GCI) and GS1 to assist industries streamline their supply chain transactions, in the aim of reducing supply chain costs. The GDSN is an internet based interconnected network of interoperable data posted to a global registry that enables companies around the globe to exchange standardised and synchronise supply chain data with their trading partners.

EPC: The EPC (Electronic Product Code) Network is an open standards-based system that will make organisations more effective through real and timely visibility of information about items in the supply chain. This new, open global standard combines low-cost RFID technology, existing communications network infrastructure and the Electronic Product Code (a number for uniquely identifying an item) to create cost-efficient, real-time, accurate information about the location of items, the history of items, and the number of items in the supply chain. It is based on research conducted through the Auto-ID Centre with the support of more that 100 leading companies.

The EPC Network is comprised of five fundamental elements:

- Electronic Product Code (EPC)
- EPC Tags and Readers
- Object Name Service (ONS)
- Physical Markup Language (PML)
- Middleware (Application Level Event Software)

Bar Codes & Numbering: Within the GS1 System, numbering and data carriers (bar codes) are used to make possible the identification of all trade items, processes, services, shipments, assets, companies and locations to facilitate communication, data collection and exchange of information and



smooth the flow of information between trading partners. GS1 Australia strives to assist and support our members and industry to implement the GS1 System to obtain maximum benefits.

Note: E-Messaging and bar coding/numbering comprise the EAN•UCC Standards. Hence, the EAN•UCC standards, GSDN and EPC comprise the GS1 System. For more information, please refer to the diagram below.



2 Executive Summary

Businesses need to continuously improve their efficiency in order to survive. Supply chain management has become one of the key areas of operations where businesses can gain major efficiency gains by changing the way they operate. It is a key attribute of this relatively recent development that the successful implementation of supply chain management requires not just internal improvements but the coordination of change management across a range of cooperating businesses. The objectives of supply chain management cannot be achieved without the ability by participating businesses to speak the same language. The adoption of the Automotive Aftermarket (AA) Industry Guidelines for the Numbering and Bar Coding of Trade Items will permit participating businesses to communicate with each other with electronic means and track, trace, deliver and pay for goods across the whole supply chain. In Australia, GS1 Australia administers the numbering system that complies with worldwide standards. Thus the adoption of the proposed solution enables businesses to integrate with other supply chain management systems.

Although the Guidelines are a fairly technical document careful reading provides a good understanding of how uniform numbering and the associated use of bar codes can be used in the identification of products for sale (“trade items”), shipment (“logistic”) units and the source (“location”) of goods. They explain the principles of product numbering using various numbering systems and their suitability for different applications. They describe how ID numbers for units of shipments can be used to track consignments all the way along the supply chain. The ID number for the source of goods may refer to a company, functional entity within a company or a physical location but in any case it is essential data for electronic communication. The use of uniform numbering systems and the use of Bar Codes to represent these ID numbers to enable scanning at various points along the supply chain is expected to result in major efficiency gains by members of the Australian Automotive Industry.

The Guidelines introduce various forms of numbering and Bar Codes and explain which Bar Code is to be used depending on the circumstances. (The rules regarding attributes of the label, e.g. position, size, etc. are detailed in a separate manual also available from GS1.) For items sold at retail Points Of Sale the recommendation is to use a 13-digit EAN/UCC number. Non-retail items may be identified by a UCC/EAN128 bar code that may include other data, such as batch number, use-by date, etc. They cover information requirements regarding shipment unit IDs which include Bar Codes and other text messages. Then there are recommendations and examples of Label Formats specifically for the Automotive Aftermarket Industry. The main rules regarding the location and position of the Bar Code labels are also included.

The second part of the Guideline includes suggestions for industry specific scenarios with detailed examples for product and shipping unit identification. It also includes practical information, including a checklist to ensure that the Bar Codes are readable and rules on creating location ID numbers. The Guidelines conclude with a brief explanation of the range of services GS1 Australia can offer to members of the Automotive Aftermarket Industry.



3 Benefits of Implementation

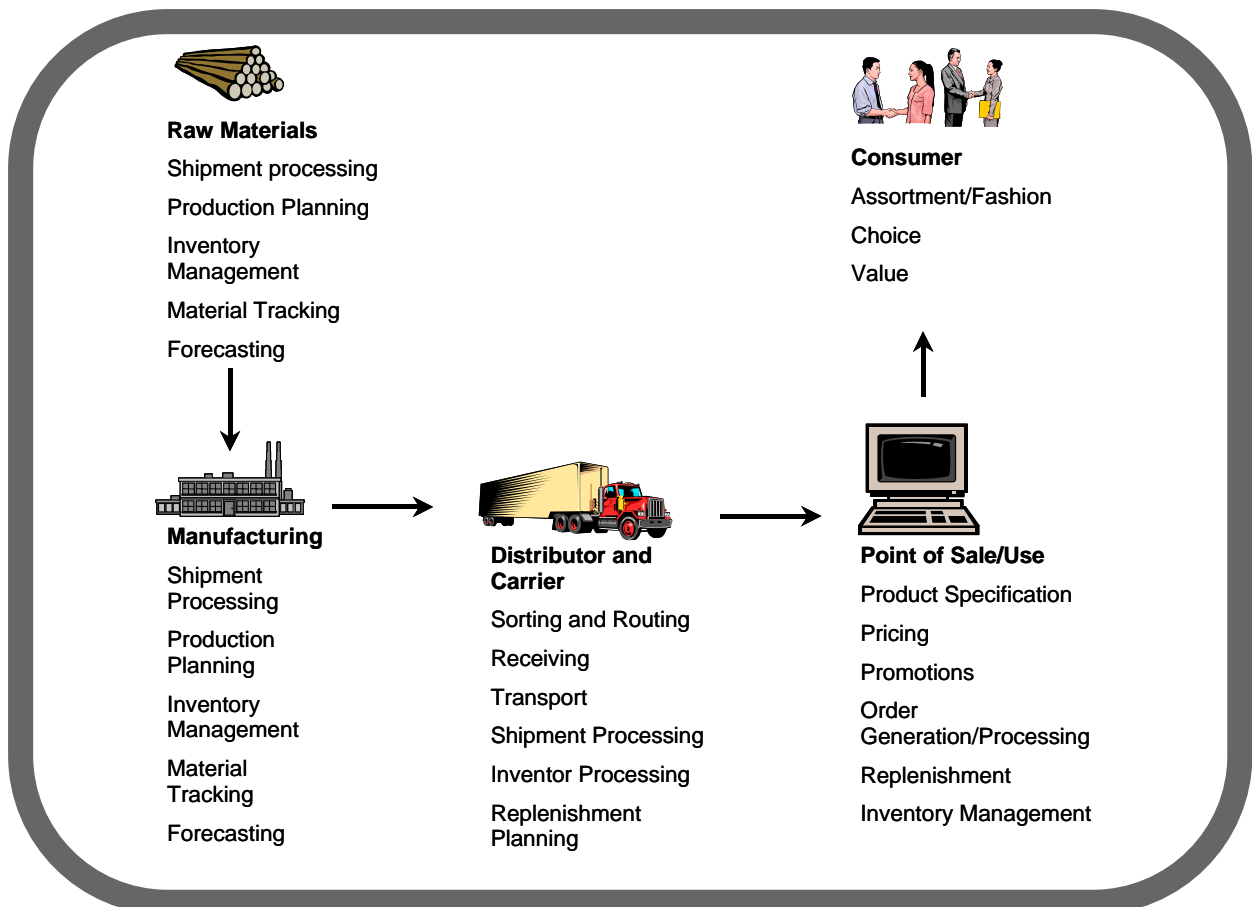
Using a standard common approach to the numbering and bar coding of trade items and logistic units will move towards delivering benefits of speed, accuracy and labour savings in the handling and distribution of goods throughout the entire supply chain. Companies should consider that the implementation of the EAN•UCC standards is applicable not only to meet customer or trading partner demands but also to improve internal supply chain management. The benefits listed below are defined generically for users throughout the entire supply chain and not just the end user.

Some of the specific identified benefits are:

- More accurate information
- Real-time information
- Reduced manual entry
- Improved traceability (including for product recalls/withdrawals)
- Common identification across Industry
- Improved stock handling
- Improved stocktaking
- Reduced picking errors
- Reduce customer order

The numbering and bar coding of trade items supports the following supply chain functions:

Diagram 1: Numbering and Bar Coding Benefits along the Supply Chain



4 Australian Automotive Aftermarket Industry Requirements

This is a practical guideline for companies who are intending to implement the numbering and bar coding of trade items. The recommended times listed below for implementation are provided as a guide for all parties throughout the supply chain and it is recognised that some companies may require more or less time according to their current level of implementation and trading partner agreements.

Table 1: Implementation Timetable

Time Frame	GTIN required for POS items	GTIN required for trade items not sold at POS	Attribute data identified at Industry Level	SSCC*	Global Location Number
1 st December 2003	Required on Individual trade items				
1 st June 2004		Required on trade items not sold at the point of sale where appropriate			
1 st June 2004				Will be required by most retailers for scan receipting	
To be advised			Additional information may be required based on trading partner relationships		
To be advised					Will be required once messaging standards implemented

* When combined with EDI the SSCC improves efficiency throughout the supply chain. In the event where EDI has not yet been fully implemented solutions exist to enable the use of the SSCC during any transitional period. Refer to Section 7 for relevant solutions.



5 Principles of the EAN•UCC standards

5.1 Introduction

The EAN•UCC standards cover different areas of application. These include trade items, logistic units, assets and locations.

These applications rely on standard numbering structures by which all relevant items and their data can be identified. The numbers are the keys to access databases and unambiguously identify items handled. At the same time these numbers are used in all messages of a transaction.

Numbering is for identification only and any information is found in databases. The information is communicated from the user-to-user once, generally before the first transaction either by using standard messages or by consultation of electronic catalogues.

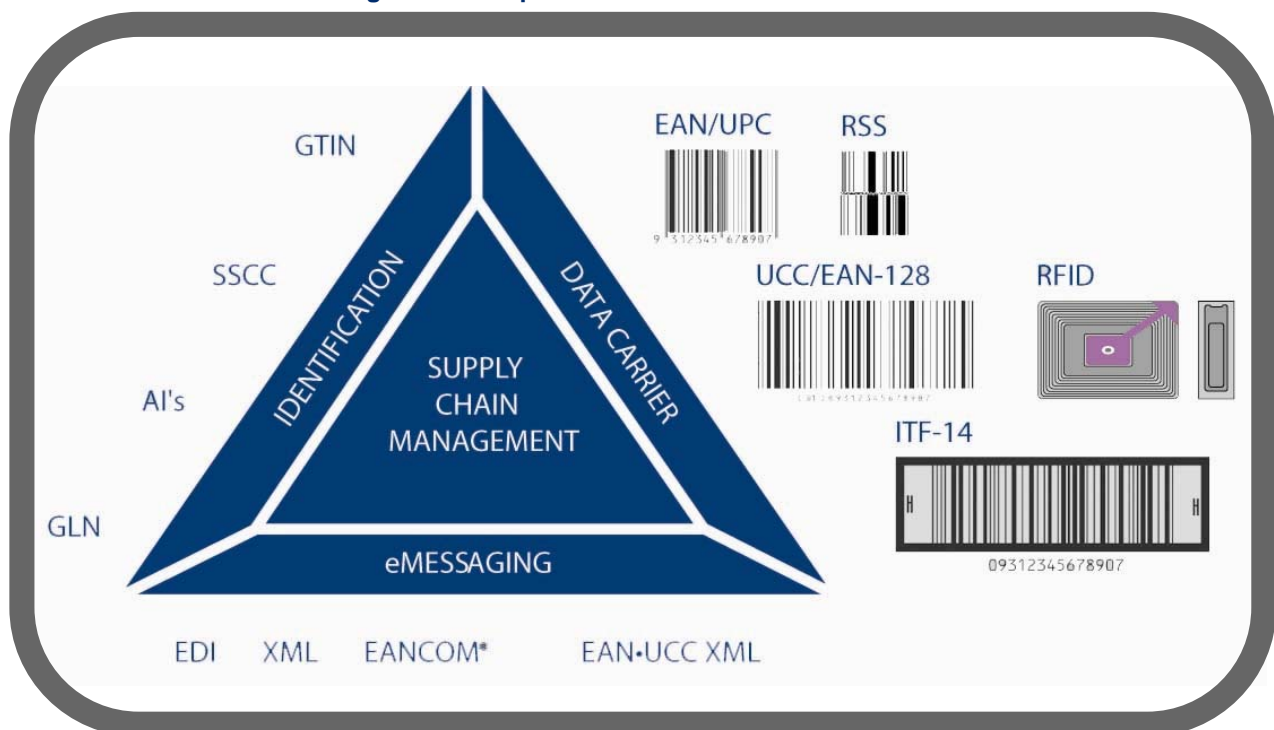
The numbers are represented in bar codes to allow automatic data capture at each point where an item leaves or enters a premises. Bar codes are usually included in the production process, at the producer/supplier site or they may be pre-printed with other information present on the packaging. The method of application of the bar code depends on the information required, the type of product produced and other printing factors.

The same numbers are also used in Electronic Data Interchange (EDI) messages to allow all information relevant to the transaction to be identified.

The standard numbering structures that are provided guarantee worldwide uniqueness within the relevant area of application.

In addition to the numbering structures, the EAN•UCC standards allows for the marking of additional information known as attribute data. Examples of such data includes, serial numbers, weights for variable measure trade items, batch numbers etc.

Diagram 2: Components of the EAN•UCC standards



5.2 The Data Structures – Numbering

The EAN•UCC standard provides data structures for different applications. The application will determine how the number is to be used, but regardless of application, each number must be used in its entirety and not broken into constituent parts. The data structure guarantees worldwide uniqueness within the relevant area of application.

5.2.1 Global Trade Item Number (GTIN)

A trade item is any item (product or service) upon which there is a need to retrieve pre-defined information and that may be priced or ordered or invoiced at any point in any supply chain. This definition covers raw materials through to the end user products and also includes services, all of them having pre-defined characteristics.

A trade item may be a single, non-breakable unit. It may also be a standard and stable grouping of a series of single items. Such a unit may be presented in a wide variety of physical forms: a fibreboard carton, a covered or banded pallet, a film wrapped tray, a crate with bottles, etc. Trade items consisting of single units are identified with a unique Global Trade Item Number (GTIN); standard groupings of identical or different units are identified with separate unique GTIN's.

Note: Global Trade Item Numbers (GTIN's) were formally known as EAN numbers. This document will refer only to the numbers, as GTIN's to ensure current international terminology is adhered to.

The identification and bar coding of trade items enables the automation of the retail point of sale, of product receiving, inventory management, automatic re-orderings, sales analysis and a wide range of other business application.

The GTIN can be represented in one of four ways:

- EAN/UCC-14
- EAN/UCC-13
- UCC-12
- EAN/UCC-8

The above mentioned data structures provide unique identification when they are right-justified and stored in a 14 digit data field as shown in *Table 2: EAN•UCC Data Structures* below.

Table 2: EAN•UCC Data Structures

Numbering Structure for a GTIN	GTIN within a 14 digit computer field													
	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄
EAN/UCC-14	1	9	3	1	2	3	4	5	6	7	8	9	0	4
EAN/UCC-13	0	9	3	1	2	3	4	5	6	7	8	9	0	7
UCC-12	0	0	6	1	2	3	4	5	1	2	3	4	5	2
EAN/UCC-8	0	0	0	0	0	0	9	3	1	2	3	4	5	7

Note: T represents the position of each individual digit in a computer file format and zero (0) represents a filler digit. This format is used in business transactions, especially for Electronic Data Interchange (e.g. orders, invoices, price catalogues).



5.2.2 Attributes of Trade Items

Attribute information of trade items is any data over and above the item identity allocated to the GTIN. Examples of this type of information include batch numbers, serial numbers, variable measure information such as length, weight etc.

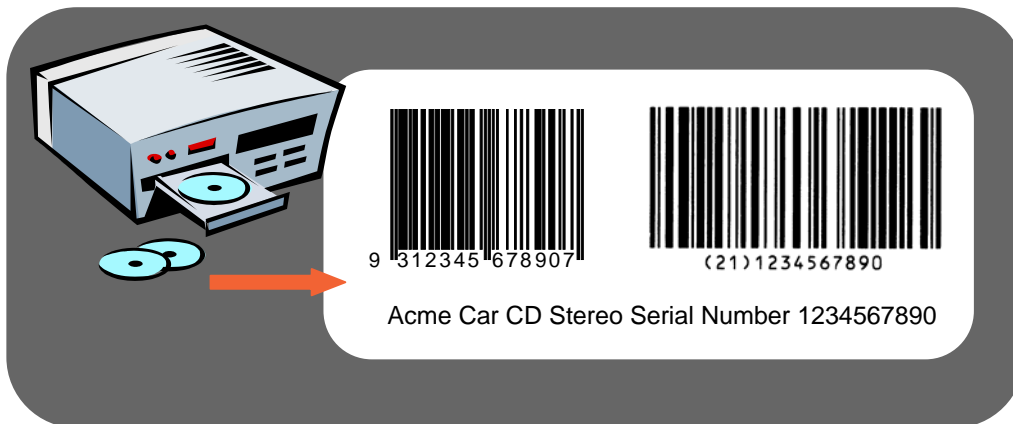
Attribute information is always represented with Application Identifier's (AI's) represented in an UCC/EAN-128 bar code. The use of Application Identifier's ensures that the attribute information can be used between trading partners throughout the entire supply chain.

Suppliers, at their discretion, can apply to trade items any of the AI's available to them under the EAN•UCC specifications (Refer to GS1 Australia website, www.gs1au.org in the download section for a complete list of list of AI's available). The use of attribute information can facilitate traceability within the supply chain and hence improve quality control, production of consistent product, stock rotation etc.

Example:

Diagram 3: Attribute Information used for traceability

Car Stereo's may need Serial numbers



Example:

Diagram 4: UCC/EAN 128 barcode with Serial Number



If this Car Stereo was not sold at Point Of Sale we could concatenate the information into one barcode, which could be scanned once.

SERIAL NUMBER: 1234567890



Example:

Diagram 5: UCC/EAN 128 Barcode with Expiration Date (Use By)



Expiry Date: 30th October 2005

IMPORTANT NOTES:

- Attribute information cannot stand-alone; it must always be accompanied with a GTIN.
- Attribute information can be added as an additional bar code to an existing EAN-13, UPC-A, ITF-14 or an UCC/EAN-128 bar code, which is representing a GTIN.
- Attribute information can be applied to either a standard GTIN or to variable measure GTIN.
- If an AI is used more than once (e.g. if a label is applied twice to a trade item), it must be followed by the same information. This restriction ensures the non-ambiguous interpretation of each AI.
- Attribute information cannot be scanned at the retail point of sale.

For further information regarding the use of Application Identifiers please refer to the **GS1 Australia User Manuals** or contact GS1 Australia.



5.2.3 Serial Shipping Container Code (SSCC)

The Serial Shipping Container Code (SSCC) is a standard identification number, used for the unique identification of logistic (transport and/or storage) units.

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

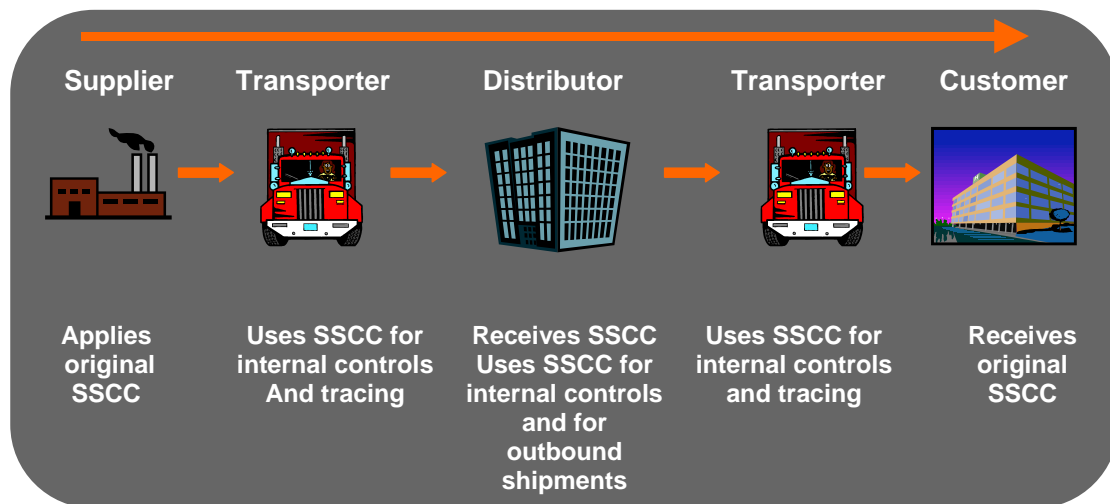
Scanning the SSCC marked on each logistic unit allows the physical movement of units to be individually tracked and traced by providing an information flow. It also opens up the opportunity to implement a wide range of applications such as cross docking, shipment routing, automated receiving etc.

The SSCC is used to uniquely identify goods on the way from sender to final recipient, and can be used by all participants in the transport and distribution chain. Each shipping container or logistic unit, at the time of its creation, is uniquely identified by the sender with an SSCC. A label encoding the SSCC is applied to the logistic unit using the appropriate AI and the UCC/EAN-128 bar code.

The SSCC uniquely identifies the entity (i.e. the shipping container or logistic unit to which the SSCC is applied) for the lifetime of that unit.

The SSCC can be used by all parties in the supply chain as a reference number or license plate to extract all the relevant shipping container information held in computer files within the receiver's information systems. The SSCC acts as a "reference key" which unlocks the information in the computer systems.

Diagram 6: The Use of the SSCC throughout the supply chain



It is essential that the recipient, the transport company, distributor or customer, of the transport unit with the SSCC attached, receives prior advice about the details of the transport unit and the SSCC. This advice is usually communicated via Electronic Data Interchange (EDI), which is the computer-to-computer exchange of business messages in a standard format.

There may be instances where all parties relevant to a particular shipment are not fully EDI capable and where only some EDI messages are being exchanged. In this situation there may be a requirement to add additional information to the logistics label to facilitate the process of the logistic units through the supply chain. Alternatively the whole supply chain may be fully EDI capable and the whole suite of shipping messages are being exchanged.

Refer to Section 7 for further information on SSCC's.



5.2.4 Global Location Numbers (GLN)

The Global Location Number (GLN) is used to identify a company or organisation as a legal entity. GLN's can also be used to identify physical locations, or functional entities within the company.

The use of GLN's is a pre-requisite for efficient Electronic Data Interchange (EDI).

Please refer to Section 10.2 for further information on GLN's.

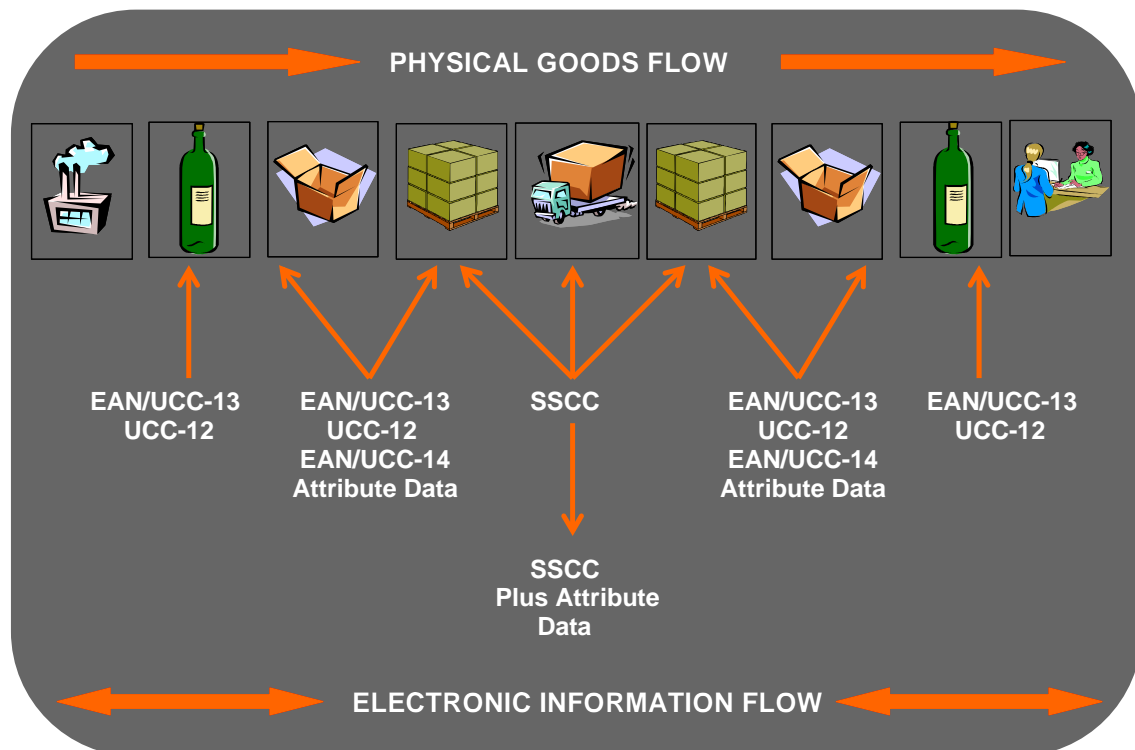
5.2.5 Asset Numbering

The EAN•UCC standards provides a method for the identification of assets. The object of asset identification is to identify a physical entity as an inventory item.

Asset Identifiers may be used for simple applications, such as the location and use of a given fixed asset (e.g. a personal computer), or for complex applications such as recording the characteristics of a returnable asset (e.g. a reusable beer keg), its movements, its life-cycle history and any relevant data for accounting purposes.

Within this guideline, Asset Numbering has not been covered in any further detail. If however you require further information please consult the **GS1 Australia User Manuals** or contact GS1 Australia.

Diagram 7: EAN•UCC Identification across the Supply Chain



5.3 The Data Carriers - Bar Codes

5.3.1 Introduction

Bar codes are the data carriers used in the EAN•UCC standards. Other data carriers may be introduced in the future such as two-dimensional codes, radio frequency tags etc.

Within the EAN•UCC standards there are a number of different data carriers (bar codes) used for different applications throughout the supply chain. Determining which is the correct bar code to use is generally determined by application of the trade item, logistic unit etc through the supply chain.

Some bar codes must be used in certain parts of the supply chain, particularly relevant to the retail point of sale sector. In any case final consideration of the item's path through the supply chain will aid in the determination of the correct bar code type.

If in doubt please consult GS1 Australia 's Help Desk for further information.

The three data carrier types are:

- EAN/UPC Symbology*
- ITF-14 Symbology
- UCC/EAN-128 Symbology

*Symbology is another more technical term for the bar code or data carrier type.

5.3.2 EAN/UPC Symbology

The EAN/UPC Symbology (which includes the UPC-A, UPC-E, EAN-13, and EAN-8 bar codes) is a bar code family that can be read omni-directionally. It **must be** used for all items that are scanned at the Point-of-Sale and may be used on other trade items throughout the entire supply chain.

Figure 1: Examples of EAN-13, EAN-8, UPC-A and UPC-E Bar Codes



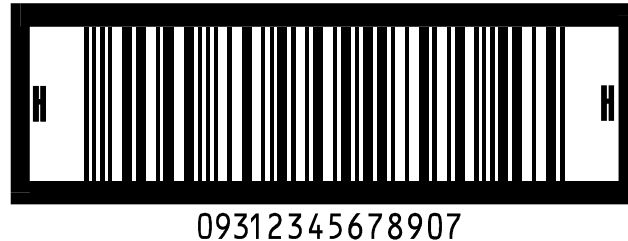
Unless products are to be sold in the North America and/or Canada companies will generally use the EAN-13 bar code. Please consult with GS1 Australia if your trade item is to be sold within North America and/or Canada.



5.3.3 ITF-14 Symbology

The ITF-14 bar code (Interleaved 2-of-5) is restricted to use on trade items **not** passing through the retail point of sale.

Figure 2: Example of an ITF-14 bar code



5.3.4 UCC/EAN-128 Symbology

UCC/EAN-128 is a variant of Code 128. GS1 exclusively license its use. This is an extremely flexible bar code and is used for the representation of EAN•UCC Application Identifiers. It is **not** intended to be read on items passing through the retail point of sale.

Figure 3: UCC/EAN-128 Bar code



For printing of EAN/UPC, ITF-14 and UCC/EAN-128 bar codes on trade items the standards as specified in the *GS1 Australia User Manuals* are applicable.

5.3.5 Choosing the Correct Data Carrier (Bar Code)

As described above, the path the trade item will take through the supply chain generally determines the choice of which data carrier to use. Whilst choice can often seem complex, sticking to a few simple guides can often assist this process.

Some of the following questions may assist in the determination of the correct data carrier to be used:

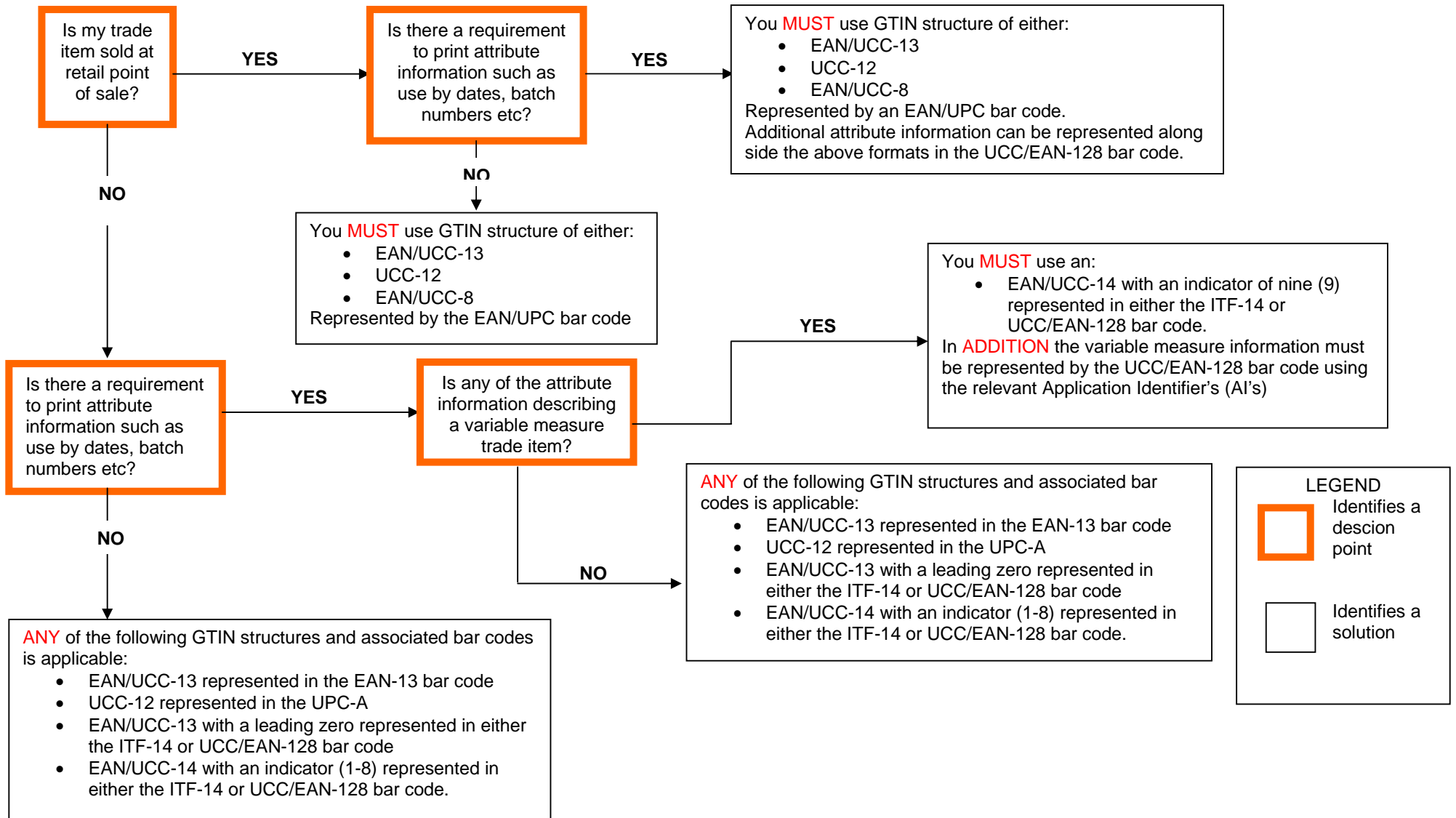
- Will the trade item ultimately be sold at the retail point of sale?
If YES then the data carrier choice **must** be the EAN/UPC symbology
- Is there a requirement to print additional information such as serial numbers?
If YES then the data carrier of choice must be the UCC/EAN-128 symbology.
- What printing method will be used to print the data carrier?
Some data carriers require more specific print methods than others, hence one may be more suitable than the other.

The following flow chart can assist in making the most suitable decision over which GTIN format and data carrier will suit your application.

For further information please consult GS1 Australia.



Diagram 8: GTIN and Data Carrier Decision Flow Chart



5.3.6 Summary of GTIN and Bar Code Options

The following depicts a summary of the GTIN and bar code options available and the applicable points through the trading supply chain for use.

Table 3: GTIN and Bar Code Format Options

GTIN structure	Bar code format		
	EAN/UPC	UCC/EAN-128	ITF-14
	Must be used for all retail point of sale items	To be used if there is the need for attribute information	Ideal for direct printing onto cardboard cartons.
EAN/UCC-13	Trade Items sold at retail POS AND Trade items NOT sold at retail POS	N/A	N/A
EAN/UCC-13 with a leading zero.	N/A	Trade items NOT sold at retail POS	Trade items NOT sold at retail POS
EAN/UCC-14 with an indicator 1-8	N/A	Trade items NOT sold at retail POS	Trade items NOT sold at retail POS
Variable Measure EAN/UCC-14 with leading 9	N/A	Trade items NOT sold at retail POS	N/A
Attribute information, eg Batch number, Use by date, Variable measures	N/A	Trade items NOT sold at retail POS Can be used as an additional bar code with EAN/UPC or ITF-14 Bar codes	N/A
SSCC	N/A	Logistic Units	N/A



6 How to Number and Bar Code Trade Items

The following section describes the method by which a Global Trade Item Number (GTIN) can be assigned and the appropriate bar code to be used on trade items. Specific examples and scenarios of product types found in the various sectors of the Insert Industry Name/Industry can be found towards the latter section of this document.

Regardless of the method by which a GTIN is assigned it is important always to assign separate GTIN's to every different variation of a product. Size, style, grade, colour etc are all considered separate variations and thus require separate GTIN's.

Any change to trade items such as weight, description etc may require the allocation of another GTIN. In this event consult www.gs1au.org/services/gtin/gtin.asp for guidance of when it is required to change the GTIN or contact GS1 Australia for further information.

Diagram 9: Example of a trade item carrying an EAN/UCC-13 number represented in an EAN-13 bar code



Product: Drylube 100ml



Product: Drylube 200ml

When allocating GTIN's in any of the formats described in the following sections, GS1 Australia recommends that no significance is created within the GTIN itself. Data is linked via a database to the GTIN, thus no level of understanding is required within the number itself.

Note: Do not re-use a deleted GTIN until a **minimum** of four years after the date that you last issued the trade item into the market place. Companies may choose to extend the period of time before a GTIN is re-used beyond the minimum of four years this is perfectly acceptable.



6.1 Trade Items Sold at Retail Point of Sale (POS)

6.1.1 Definition

Any trade item which is intended to be sold to the final consumer through retail point of sale is more commonly known as a **RETAIL ITEM or CONSUMER UNIT**.

Any trade item that could be sold at the retail point of sale as well as traded through the distribution supply chain is numbered and the type of bar code selected according to the rules applicable to trade items sold at retail POS.

Note: The description of the format of the UCC-12, EAN/UCC-8 numbers, EAN-8 and UPC-E bar codes have not been included in this guideline. If you require further information regarding the formats of these numbers either consult the ***GS1 Australia User Manuals*** or contact GS1 Australia.



6.1.2 Format of the EAN/UCC-13 Number

Trade items that are sold at the retail POS are generally allocated an EAN/UCC-13 number. This number is represented in an EAN-13 bar code.

Unless products are to be sold in North America and/or Canada companies will generally use the EAN-13 bar code. Please consult with GS1 Australia if your trade item is to be sold within North America and/or Canada.

The format of the EAN/UCC-13 number is:

EAN•UCC Company prefix:	The EAN•UCC Company Prefix is allocated by a GS1 member organisation. GS1 Australia allocates a nine-digit company prefix (in the past seven digits was also issued).
Item reference:	A unique non-significant number for each individual trade item. Generally issued sequentially, 000,001, 002 etc for each different variant of a product.
Check digit:	Validates the accuracy of the entire number by mathematical formula

Figure 4: Example of EAN-13 bar code representing the EAN/UCC-13 number



Diagram 10: Example of a trade item carrying an EAN/UCC-13 number represented in an EAN-13 bar code



Note: The location of the label is for demonstration purposes only.

Refer to the **GS1 Australia User Manuals** for further information on the format of EAN/UCC-8 and UCC-12 numbers.



6.2 Trade Items NOT Sold at Retail Point of Sale (POS)

6.2.1 Definition

Trade items that are any standard grouping of items made up to facilitate the operations of handling, storing, order preparation, shipments etc and may often be referred to as **NON-RETAIL ITEMS OR TRADE UNITS**.

A trade item may be a single, non-breakable unit. It may also be a standard and stable grouping of a series of single items. Such a unit may be presented in a wide variety of physical forms: a fibreboard carton, a covered or banded pallet, a film wrapped tray, a crate with bottles, etc. Trade items consisting of single units are identified with a unique Global Trade Item Number (GTIN); standard groupings of identical or different units are identified with separate unique GTIN's.

It is recognised that beyond the trade item sold at retail point of sale, there can be many different levels of packaging of trade items. The first level of packaging, which is not likely to be sold at retail point of sale, is considered to be the lowest level trade item (these are normally referred to as **INNERS OR INTERMEDIATE** packs). The last level of packaging (the outer most) is considered to be the highest level; this is up to but not including the pallet. However, this does not preclude suppliers from issuing GTIN's to pallets if they desire to identify the pallet itself as a trade item.

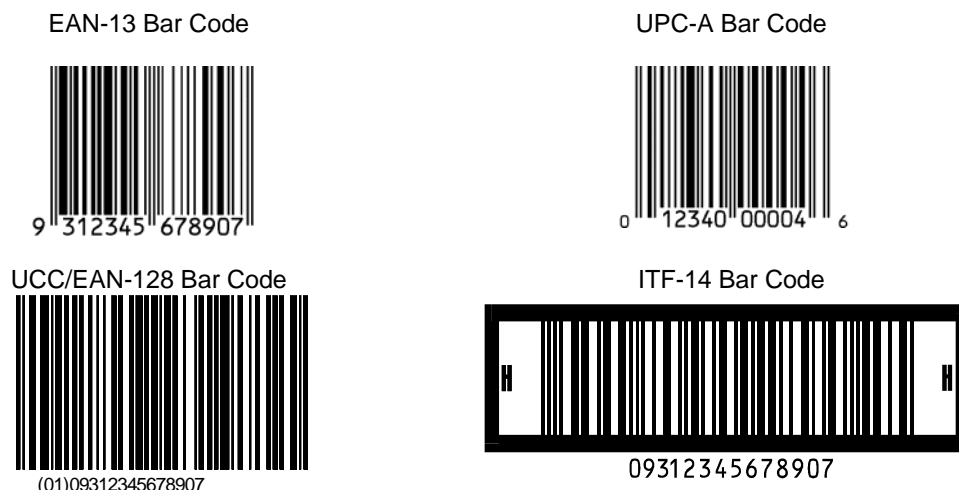
Note: Each individual level of trade item must be uniquely identified with a different GTIN.

6.2.2 Options for Trade Items NOT Sold at Retail Point of Sale (POS)

A trade item **not** sold at retail POS can be numbered and bar coded with any one of the following numbering options:

- EAN/UCC-13 number represented in and EAN-13 bar code (refer to Section 6.1)
- EAN/UCC-13 number with a filler zero represented in either the ITF-14 or UCC/EAN-128 bar code (refer to Section 6.2.3)
- EAN/UCC-14 number represented in either the ITF-14 or UCC/EAN-128 bar code (refer to Section 6.2.4)
- Allocate an EAN/UCC-14 number with an indicator 9 represented in either the ITF-14 or UCC/EAN-128 bar code (this option is **only** applicable to variable measure trade items refer to Section 6.3).

Figure 5: Examples of the Bar Code options for Trade Items Not Sold at Retail POS



Note: Data carrier (bar code) sizes are not to scale.

6.2.3 Creating a GTIN by Allocating an EAN/UCC-13 Number with a Filler Zero (Leading Zero)

Create an EAN/UCC-13 number with a filler zero (leading zero) by allocating a unique EAN/UCC-13 number, which is then preceded with a filler zero (leading zero). When a GTIN is formed with a filler zero (leading zero), the 13 characters must be unique, that is, you must **not** repeat the GTIN allocated to any other trade item.

Historically this GTIN format was used to identify standard mixed trade items, however this option can be used for **any** trade item.

The format of the EAN/UCC-13 number with a filler zero is:

Filler zero (Leading zero):	Precedes a unique EAN/UCC-13 number (refer to section 6.1.2). If using this method to create a GTIN for a shipper containing retail trade items, the EAN/UCC-13 MUST NOT be the same as the GTIN on the trade items sold at retail POS.
EAN•UCC Company prefix:	The EAN•UCC Company Prefix is allocated by a GS1 member organisation. GS1 Australia allocates a nine-digit company prefix (in the past seven digits was also issued).
Item reference:	A unique non-significant number for each individual trade item.
Check digit:	Calculated using a mathematical formula.

The EAN/UCC-13 with a filler zero can be represented in either the ITF-14 or UCC/EAN-128 bar code.

Note: If choosing to represent the EAN/UCC-13 with a filler zero represented in an UCC/EAN-128 bar code, an Application Identifier 01 must precede the number. The AI 01 identifies that the following number is a GTIN with a fixed length of 14 digits see Figure 6 below.

Figure 6: EAN/UCC-13 with a filler zero represented in an UCC/EAN-128 bar code

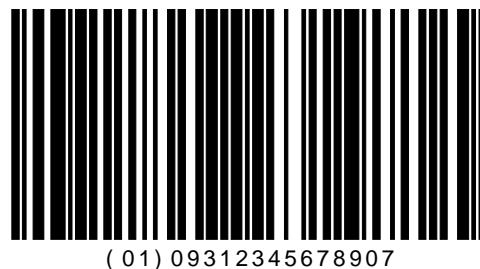
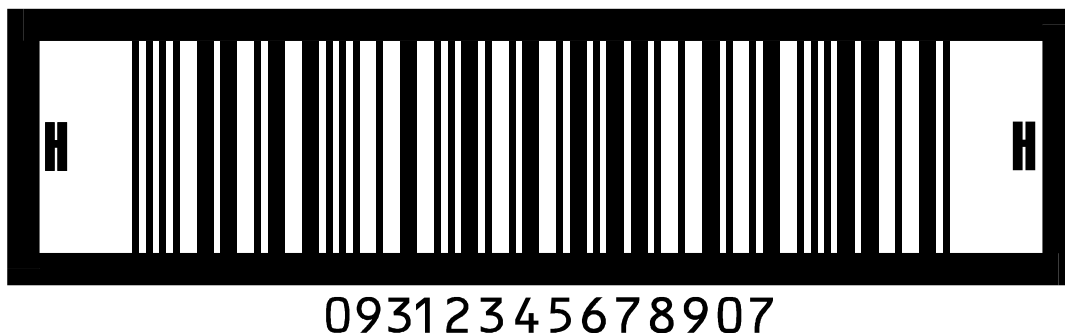


Figure 7: An EAN/UCC-13 number with a filler zero represented in an ITF-14 bar code.



6.2.4 Creating a GTIN by Allocating an EAN/UCC-14 Number.

The EAN/UCC-14 number is created by prefixing the existing GTIN of the retail/consumer trade item with an indicator (logistical variant), which is a number between 1 and 8 and recalculating the check digit. Different indicators are used to identify different levels of trade items not sold at retail point of sale. Indicators should be non meaningful and are used only to create additional unique 14 digit EAN/UCC numbers.

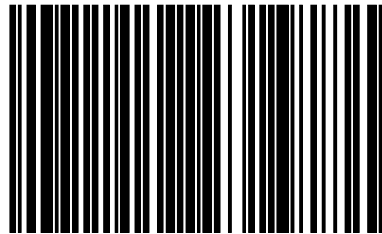
The format of the EAN/UCC-14 number is:

Indicator (logistical variant 1-8):	Precedes the first twelve digits of the EAN/UCC-13 number of the lowest level of trade item contained within the non-retail trade item.
EAN•UCC Company prefix:	The EAN•UCC Company Prefix is allocated by a GS1 member organisation. GS1 Australia allocates a nine-digit company prefix (in the past seven digits was also issued).
Item reference:	A unique non-significant number for each individual trade item.
Check digit:	Calculated using a mathematical formula.

Note: For information on creating an EAN/UCC-14 number where the GTIN of the retail/consumer item within the trade item carries an EAN/UCC-8 number please refer to the **GS1 Australia User Manuals** for further information

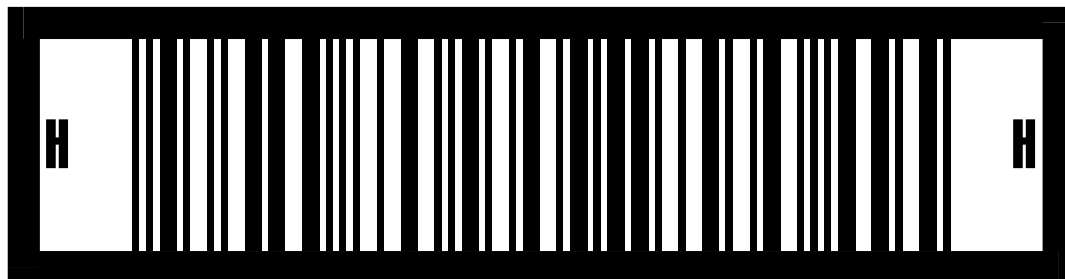
Note: If choosing to represent the EAN/UCC-14 number in the UCC/EAN-128 bar code, an Application Identifier 01 must precede the number. The AI 01 identifies that the following number is a GTIN with a fixed length of 14 digits see Figure 8 below.

Figure 8: EAN/UCC-14 with an indicator represented in an UCC/EAN-128 bar code



(01)19312345678904

Figure 9: An EAN/UCC-14 number with an Indicator represented in an ITF-14 bar code.



19312345678904



6.3 Numbering and Bar Coding of Variable Measure Trade Items NOT Sold at Retail Point of Sale (POS)

Trade items may be of variable measure either because the production process does not guarantee consistency in weight, size or length (carcasses of meat, lengths of timber etc) or because the items are created to meet a special order which states a quantity (e.g. textiles ordered by the meter, glass ordered by the square metre).

Only trade items that are sold, ordered or produced in quantities, which can vary continuously, are covered by the rules outlined below. Trade items, which are sold in discrete and pre-defined units (e.g. as a nominal weight), are treated as fixed measure trade items.

A trade item must be considered to be variable measure if its measure is variable at any point in the supply chain. For example, a supplier may sell and invoice timber in standardised bundles of a total of 10 metres, but the number of pieces of timber may vary. The customer, a retailer in this example, may need to know the exact number of pieces of timber contained in each bundle in order to organise the distribution to his stores. In this example, the supplier should source mark the trade item by using a variable measure GTIN and a variable count AI.

The EAN/UCC-14 identification number with the indicator “9” is used to identify a variable measure trade item. The presence of the variable measure information is mandatory for the complete identification of a particular variable measure trade item. The digit “9” in the first position is an integral part of the 14-digit GTIN.

Note: Variable measure information represented in the following matter **cannot** be scanned at the retail point of sale (POS).

The format of the variable measure GTIN is:

Application Identifier (01) Indicator “9”	EAN•UCC Global Trade Item Number (GTIN). Indicating that the trade item is of variable measure.
EAN•UCC Company prefix:	The EAN•UCC Company Prefix is allocated by a GS1 member organisation. GS1 Australia allocates a nine-digit company prefix (in the past seven digits was also issued).
Item reference:	Item reference allocated by the company to each different item.
Check digit:	Calculated using a mathematical formula.
Application Identifier (311n)¹	Length or first dimension, meters trade
Format	Size fixed numeric characters

Figure 10: Variable measure trade item number with a length of 2.5 metres



Note: For further information on Application Identifiers see Section 5.2.2 and consult the **GS1 Australia User Manuals**.

¹ The Application Identifier 311n has been used as an example. Any of the measure AI's available can be used.



7 How to Number and Bar Code Logistic Units

As described in Section 5.2.3, the Serial Shipping Container Code (SSCC) is a standard identification number, used for the unique identification of logistic (transport and/or storage) units.

7.1 How to Allocate the Serial Shipping Container Code (SSCC)

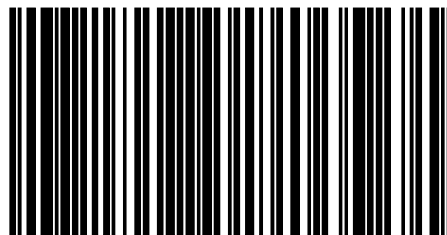
The SSCC should be handled as an *18-digit non-significant number* uniquely identifying the unit to which it is attached. To ensure worldwide uniqueness, the following general code structure has been defined by EAN International and the UCC:

The company responsible for the marking of the logistic unit is responsible for issuing the SSCC.

The format of the Serial Shipping Container Code is:

Application Identifier (00) Extension Digit	Serial Shipping Container Code (SSCC) A digit (0-9) used to increase the capacity of the serial reference within the SSCC. The company that constructs the SSCC assigns it to the logistic unit.
EAN•UCC Company prefix:	The EAN•UCC Company Prefix is allocated by a GS1 member organisation. GS1 Australia allocates a nine-digit company prefix (in the past seven digits was also issued). It makes the SSCC unique worldwide but does not identify the origin of the unit.
Serial reference:	A serial number comprises either seven digits (nine if the EAN UCC Company prefix is seven digits) and uniquely identifies each transport package or logistic unit. The method used to allocate a unique number is at the discretion of the company coding the package.
Check digit:	Calculated using a mathematical formula.

Figure 11: Serial Shipping Container Code (SSCC)



(00)393123451234567891



7.2 The EAN•UCC Logistics Label

The various trading partners involved in a distribution channel have different information needs. The information flow, which accompanies the physical flow of goods, is communicated between trading partners by various means. Electronic Commerce or EDI is the way to transmit information along the supply chain.

In practice, however, fully automated communication channels, which make it possible to rely exclusively on electronic files for retrieving information on the movements of the goods, are not always available.

For this reason, there is a need to indicate relevant information on the goods themselves, in addition to their identification. The various fields of information need to be organised in a standard way in order to facilitate their interpretation and processing by all trading partners in the supply chain.

The purpose of the EAN•UCC Logistics Label is to provide information about the unit to which it is fixed, clearly and concisely. The core information on the label should be represented both in machine (bar code) and human readable form. There may be other information, which is represented in human readable form only.

This EAN•UCC Logistics Label can be applied to a single item, or a grouping of several items made up to facilitate the operation of handling, storing and shipping. This can be:

- A carton
- A pallet
- A group of shrink wrapped units
- A tray
- A container
- Or any other similar type of packaging created for the purpose of handling, storing or shipping.

The information following is a reference for the design of logistics labels. This application is supported and complimented by Application Identifiers and the UCC/EAN-128 symbology. These are important components of the logistics label and apply to all of the specifications relating to the logistics label.

The structure and layout for logistics labels is explained, however, emphasis is given to the basic requirements for practical application in an open trade environment. The major areas include:

- the unambiguous identification of logistics units
- the efficient presentation of text and machine readable data (bar codes)
- the information requirements of key partners in the supply chain– suppliers, customers and carriers
- technical parameters to ensure systematic and stable interpretation of the labels.

This is applicable to any type of logistic unit marked with a Serial Shipping Container Code (SSCC), which is used in logistic and transport applications where there is a need to track and trace individual units or a grouping of units being a part of the same transport transaction.



7.2.1 Components of the EAN•UCC Logistics Label

Information represented on EAN•UCC Logistics Labels has two basic forms:

- Information required to be utilised by people—usually comprising of text and graphics, e.g. to and from addresses
- Bar codes (machine readable form)—a secure and efficient method of conveying structured data

The human readable text allows general access to basic information at any point in the supply chain. However, both methods of information representation provide value to the EAN•UCC Logistics Label and often co-exist on the same label.

The mandatory field for all logistics labels is the Serial Shipping Container Code (SSCC), AI 00. The SSCC is a unique identification number assigned to each specific logistics unit. In principle the SSCC is sufficient for all logistic applications.

In an environment where Electronic Data Interchange (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.

However, when EDI is not available at each point in the supply chain, or when redundancy is desired, certain additional elements of information are desirable. Each of these is also represented through the use of Application Identifiers (AI's).

7.2.2 Label Design

The design of the logistics label accounts for the supply chain process by grouping information into three logical sections. A section is a logical grouping of information that is generally known at a particular time.

- **Supplier section:**
This section 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 section**
The customer section of the label contains information that is generally known at the time of the order and order processing by the supplier. Typical information includes the ship to location, purchase order number, and customer-specific routing and handling information.
- **Carrier section**
The carrier section 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), Consignment Numbers, AI (401), and carrier-specific routing and handling information.

Each label section may be applied at a different point in time, as the relevant information becomes known. However should all relevant information be known at the time the label is to be produced it can be combined into one label, please refer to examples in Section 7.3.

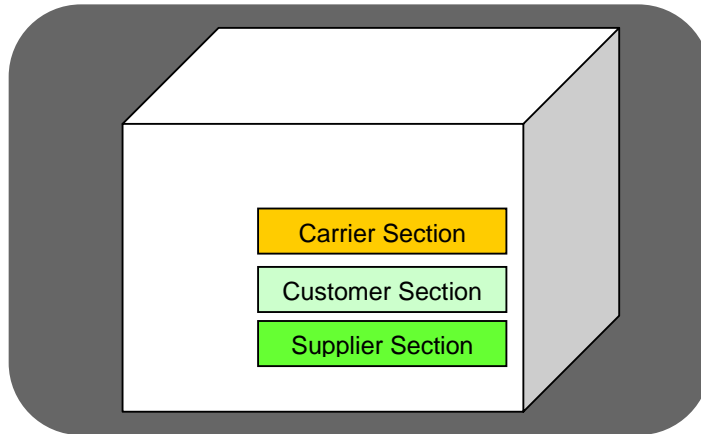
Within each section bar coded information is separated from text information to facilitate separate processing by automatic data capture and people. Bar codes are represented in the lower part of each section, while human readable information is shown in the upper part of the section. This facilitates access to each component as required.

The organisation responsible for the printing and application of the label, determines the content format and dimensions of the label.



Further information regarding the type of data included in these sections can be obtained from the **GS1 Australia User Manuals**.

Diagram 11: Label sections represented separately on a logistic unit



7.2.3 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.

The A6 format (105mm x 148mm) is sufficient for most requirements and is the predominant label size used. Other sizes are usually variations that result from other information requirements or the logistic unit size. A recommended guide is that the width of the label should remain constant at 105mm, while the height of the label varies depending on information requirements.

7.2.4 Technical Specifications

The following sections identify specific aspects of the format of the logistics label to assist in the initial processes of development. Not all technical aspects have been provided within this document and companies should ensure that they consult the **GS1 Australia User Manuals** or contact GS1 Australia for further information.

7.2.4.1 Bar Codes

The UCC/EAN-128 bar code shall be used for all information on the EAN•UCC Logistics Label.

The number of UCC/EAN-128 bar codes may be minimised by using the concatenation facility wherever possible. When not possible due to constraint of label size, data can be represented in multiple bar codes. The sequence of the bar coded data elements is irrelevant in terms of interpretation.

Note: The exception is the SSCC, which is the identifier for the logistics unit and the most fundamental element of the label. Due to the larger magnification recommended for the SSCC, concatenation is not feasible on a standard width label.

7.2.4.2 Bar Code Orientation and Placement

Bar codes shall be in picket fence orientation on logistics unit. 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.



7.2.4.3 Text

Text is data that is not represented within any bar code formats on the logistics label.

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

- Plain text
- Human translation
- Data titles

Further details can be found in the **GS1 Australia User Manuals**.



7.3 EAN•UCC Logistic Label Formats for the Insert Industry Name Industry

As described in Section 7 there is the ability to identify logistic units with the use of the Serial Shipping Container Code (SSCC). Where companies and/or industry sectors are not fully EDI capable there is often a need to identify additional data represented on the EAN•UCC Logistics Label to assist processing of shipments through the supply chain.

The following section describes the minimum data set required on an EAN•UCC Logistics Label for the Australian Insert Industry Name Industry for use on logistic units of the following configuration:

- **Logistic unit containing the same trade items (See Diagram 12)**
This label format would be used in the instance where the trade items carry the same GTIN's within the logistic unit. Data on this label is only applicable where the GTIN's are all the same on the individual trade items, for example a pallet of 50 cartons of nails Provide Industry Specific Example.
- **Logistic unit containing the same configuration of trade items (See Diagram 13)**
In the event that the logistic unit itself has been assigned a unique GTIN this label example can be used. This label format should be used when the trade item is a standard, stable and orderable trade item in itself. The logistic unit could consist of either a standard grouping of identical trade items or a standard mix of trade items.
- **Mixed trade items on the logistic unit from the same Purchase Order (See Diagram 14)**
When an order is picked and packed and is a mix of various trade items from one Customer Purchase Order this label format can be used.
- **Mixed trade items on the logistic unit from various Purchase Orders (See Diagram 15)**
In the event that a back order/s is filled thus consisting of various Customer Purchase Orders this example logistics label is required. Note full use of EDI is required to advise the customer of the information linked to the SSCC.
- **Where full EDI is applicable (See Diagram 15)**
In this example full use of EDI is applicable between trading partners. Here all the information is linked to the SSCC and this acts as the key to access all information about the logistic unit. This label format can be used on all types of logistic units from, standard groupings to mixed trade items. The only requirement is that EDI is fully operational between all trading partners throughout the supply chain.

Note: Information contained on the EAN•UCC Logistics Label is negotiable between suppliers, customers and transporters/consolidators. These guidelines are in no way limit any other information, which may be required by each party in the supply chain.



Diagram 12: Example of the EAN•UCC Logistics Label Format standard pallets

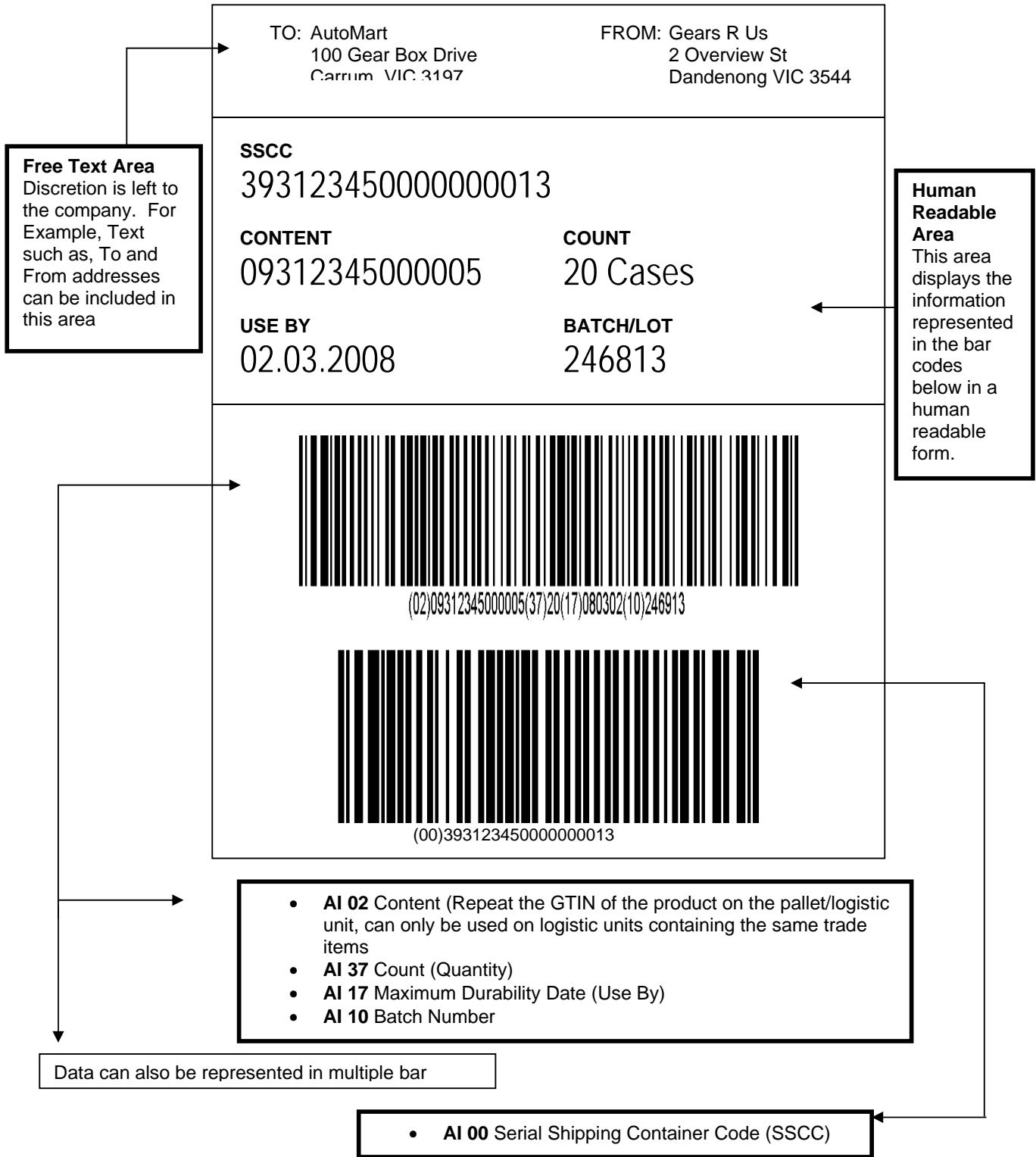


Diagram 13: Example of the EAN•UCC Logistics Label Format standard pallets

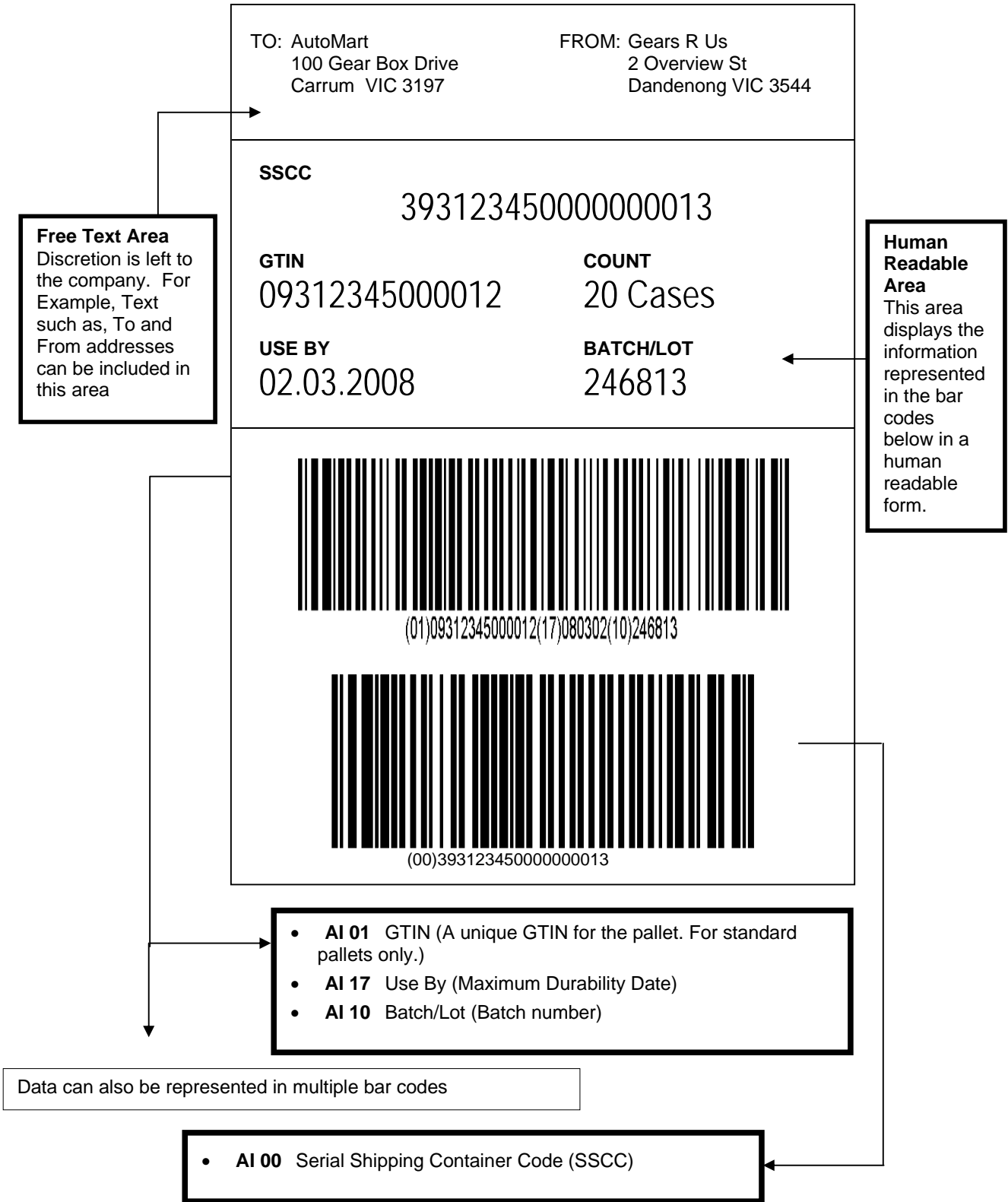


Diagram 14: Example of an EAN•UCC Logistics Label Format mixed orders same Customer Purchase Order

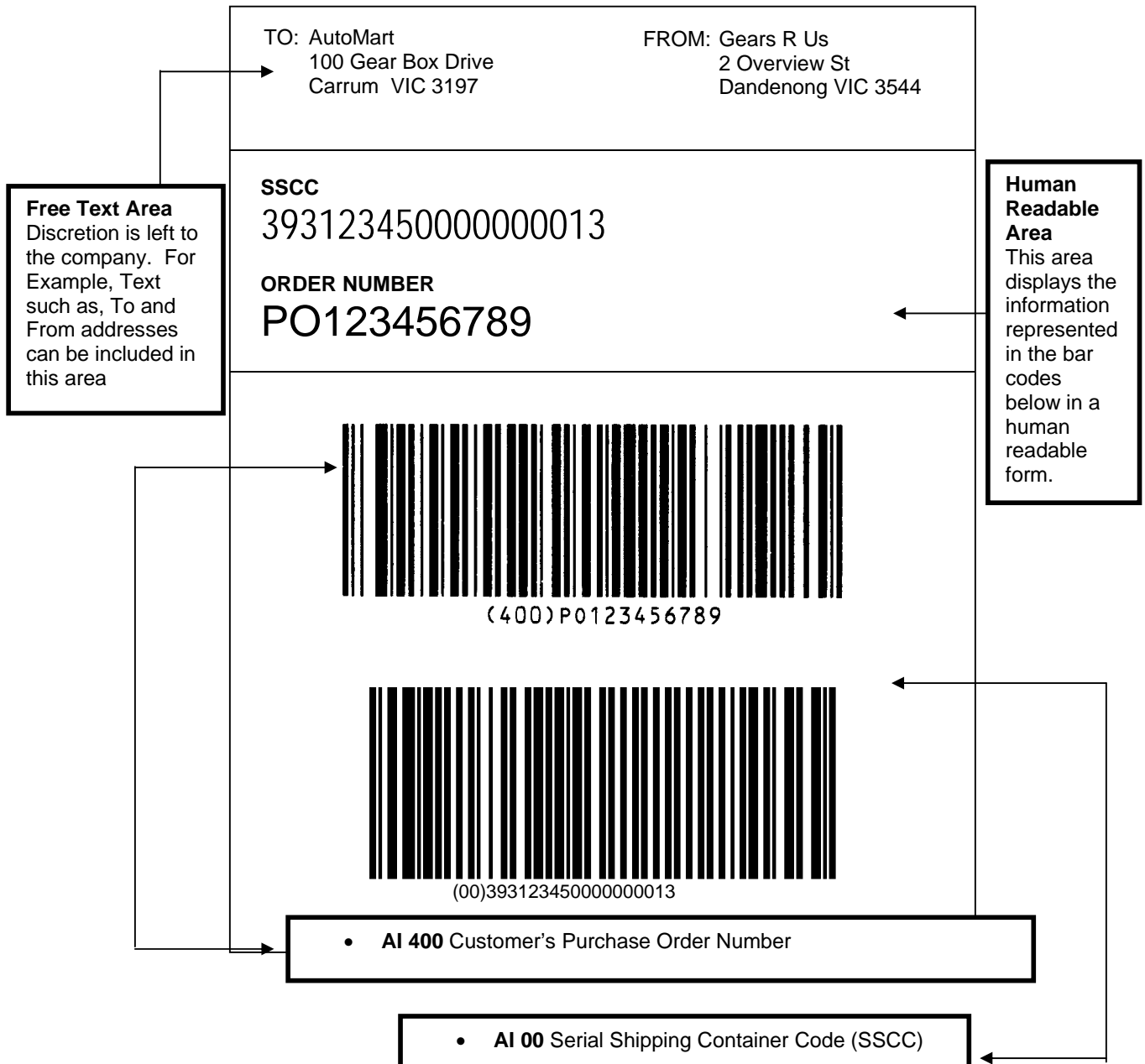


Diagram 15: Example of an EAN•UCC Logistics Label Format mixed trade items with different Customer Purchase Order Numbers



Note: Full use of EDI is required when using the above label format to advise the trading partner of the information linked to the SSCC.



8 Location of the Bar Code on Trade Items and Logistic Units

Productivity and scanning accuracy improve considerably when the bar code location is predictable. Consistency in the location of the bar code achieves maximum productivity in any scanning environment.

8.1 Trade Items Sold at Retail Point of Sale (POS)

Where the trade item sold at retail POS is to be bar coded, the **general** location for bar codes on trade items is on the lower right quadrant of the back respecting the proper light margin areas around the bar code and the edge rule.

The **edge rule** stipulates that the bar code must not be closer than 8mm or further than 102mm from any edge of the package/container.

In the event that trade items are of an irregular or unusual shape, a common sense approach should be taken to ensure that the bar code is located as close to the recommended guidelines stipulated ensuring that the scannability of the bar code is not affected by its location.

More detailed guidelines for specific types of retail trade items can be found in **GS1 Australia's User Manuals**

8.2 Trade Items NOT Sold at Retail Point of Sale (POS)

In order of preference the recommended location for the bar codes printed on trade items not sold at retail POS is:

- Minimum of two adjacent vertical sides (one short side and the long side to the right)
- As an absolute minimum on one side **only where it is not reasonably practical to apply two bar codes on adjacent vertical sides. IF ONLY ONE LABEL IS APPLIED IT SHOULD BE PRINTED AT THE HIGHER END OF THE MAGNIFICATION RANGE OR AS LARGE AS IS PRACTICAL.**

ALL ATTEMPTS SHOULD BE MADE TO MAINTAIN 100% SCANNABILITY AT ALL TIMES.

The bar code can be positioned anywhere along the face of the carton ensuring that the following **GS1 Australia User Manual** recommendations are followed:

- the lower edge of the bars of the bar code are exactly 32mm from the lower edge of the base of the carton.
- including margin areas the bar code should be located a minimum of 19mm from both vertical edges of the carton.

Note: With the ITF-14 bar code the outer edge of the left or right bearer bar should be a minimum of 19mm from both vertical edges of the side of the carton. This is to minimise damage to the bar code.



Diagram 16: Separate Printed Bar codes



Diagram 17: Wrap Around Label with Edge Separation



8.3 Logistic Units

The logistics label should ideally be located on a minimum of two adjacent vertical sides of the logistic unit, one on the short side and one on the long side to the right.

In the event that the product is not a standard carton or pallet of uniform shape all efforts should be made to try and meet the below mentioned recommendations to the best of ones ability. For irregular shaped shipments and the like common sense should direct the location of any logistics labels to ensure that the label is visible at all times.

Note: However, if only one label is applied, the side chosen needs to take into consideration the way the pallet will be picked. In this instance the label should be applied to the “pick side” of the pallet. Before taking this option, consultation with all trading partners is advised.



Consult the **GS1 Australia User Manuals** or contact GS1 Australia for further information on logistic label location.

8.3.1.1 Units Less than 1 metre in Height

For cartons and other units less than 1 metre in height, pallets excluded, labels should be placed so that the lowest edge of the SSCC is 32mm from the base of the unit. Including light margins, the bar code should be at least 19mm from both vertical edges.

Diagram 18: Location of the EAN•UCC Logistics Label on a carton or unit less than 1 metre in height



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

Diagram 19: Location of the EAN•UCC Logistics Label on a carton or unit less than 1 metre in height with the unit already marked with pre-existing bar code



8.3.1.2 Pallets Less than 1 metre in Height

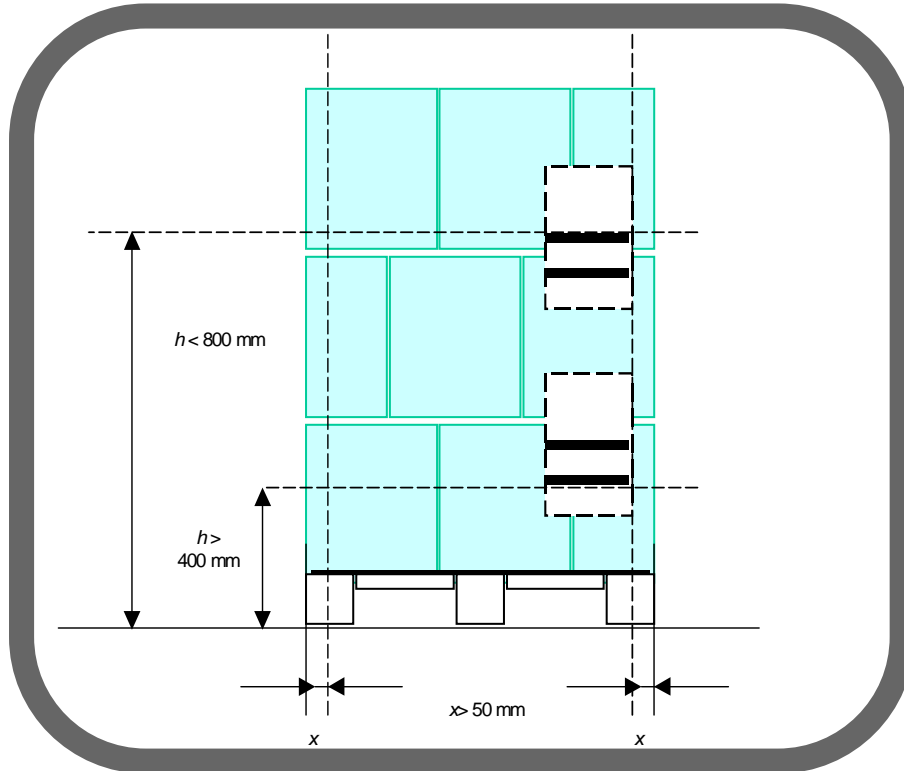
For pallets less than 1 metre in height, the logistic label should be placed as high as possible but not more than 800mm from the base of the unit.



8.3.1.3 Pallets and Other Units Greater than 1 metre in Height

For pallets and other units greater than 1 metre in height, labels should be placed so that all the bar codes are at a height between 400mm and 800mm from the surface on which the pallet stands and no closer than 50mm from the vertical edge.

Diagram 20: Location of the EAN•UCC Logistics Label



9 Industry Sector Scenarios

9.1 Introduction

The GS1 System prides itself on having a complete set of recommendations and requirements to ensure that all parties throughout the supply chain are aided and not hindered by the implementation of its system.

The Automotive Aftermarket Association guidelines have been written to provide a snapshot view of the EAN•UCC standards. Used in conjunction with the **GS1 Australia User Manuals** and assistance from GS1 Australia they have been designed to identify the key components of the system and enable suppliers within the industry to begin implementation throughout their business.

The following section of the Automotive Aftermarket Association guidelines focuses on providing examples of trade items that exist within the industry and the methods of allocating Global Trade Item Numbers (GTIN's). It is not feasible to include every possible variation of trade item available in such a document. It is up to suppliers to identify their own products and the associated method by which to allocate a GTIN and the respective bar code type applicable.

Input into this section of the Automotive Aftermarket Association Industry Guidelines has been provided by the Working Subgroup of the Automotive Aftermarket Association Industry Working Group, the members of which are:

<ul style="list-style-type: none">• Super Cheap Auto	<ul style="list-style-type: none">• Autobarn
<ul style="list-style-type: none">• Auto Concepts	<ul style="list-style-type: none">• ACL
<ul style="list-style-type: none">• Bursons	<ul style="list-style-type: none">• NGK
<ul style="list-style-type: none">• Australian Automotive Aftermarket Association	<ul style="list-style-type: none">• GS1 Australia



9.2 GTIN Options for Automotive Aftermarket Industry's Trade Items

In Section 6 the methods for allocating and representing GTIN's is described in detail and should be referred to when reviewing the following scenarios.

Regardless of the manner in which the trade item is sold, whether it is a Reel of Electrical Cabling with a standard length, or a box of screws with a standard count, it must always be assigned its own unique GTIN. For example if a brand of screws was sold as a pack of 50 or 100 each variation must be assigned its own unique GTIN. These trade items that are then packed into cartons of 100 and 50 respectively, these two variations would also be assigned a separate GTIN.

The decision of which GTIN structure and what data carrier is generally left to the discretion of each individual company and is ultimately governed by factors such as requirements within the company for the marking of additional information, the path of the trade item through the supply chain and whether the trade item will be sold in a retail point of sale environment.

9.2.1 Trade Items Sold at Retail Point of Sale (POS)

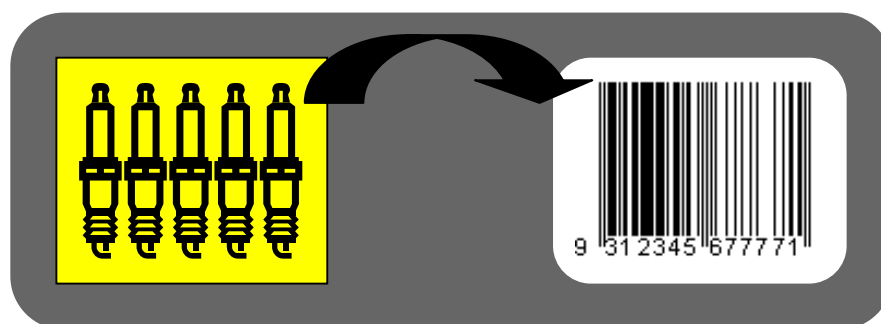
Trade items that are sold to a retailer for the point of sale environment must be numbered and bar coded as described below. In summary the recommendations stipulate that the trade item **must** be assigned unique GTIN's using the EAN/UCC-13 structure and represented in an EAN-13 bar code.

Note: All variations (different pack size, colour, variety etc) require a separate GTIN.

Note: Unless products are to be sold in the North America and Canada companies will generally use the EAN-13 bar code. Please consult with GS1 Australia if your trade item is to be sold within North America and Canada.

Example:

Diagram 21: A box of '100 Spark Plugs Type X' allocated an EAN/UCC-13 number represented in an EAN-13 Barcode.



This option **must** be used when the carton is also sold at the retail point of sale. In the event that the carton will never be sold at this point the above and following options are applicable.

Note: Each packaging level, if sold at retail POS, must have a separate GTIN represented by a unique EAN/UCC-13 number and EAN-13 bar code.



9.2.2 Trade Items NOT Sold at Retail Point of Sale (POS)

Where a trade item is sold at the retail point of sale (i.e. Box of Screws), then the option described in Section **Error! Reference source not found.** is applicable. However if the trade item, is then bundled into stable grouping (i.e. a box of screws) but this unit itself **not** sold in the point of sale environment, any of the options for the numbering and bar coding described in Section 6 are applicable.

Note: Every variation (different pack size or variety etc) requires a separate GTIN. If the variations vary for every different order a Variable Measure GTIN should be assigned, see Section 6.3 and **Error! Reference source not found.** for further information.

Example:

Diagram 22: A carton box with '3 x 100 Spark Plugs Type X' allocated an EAN/UCC number with a leading zero represented in a UCC/EAN 128 barcode.



OR

Example:

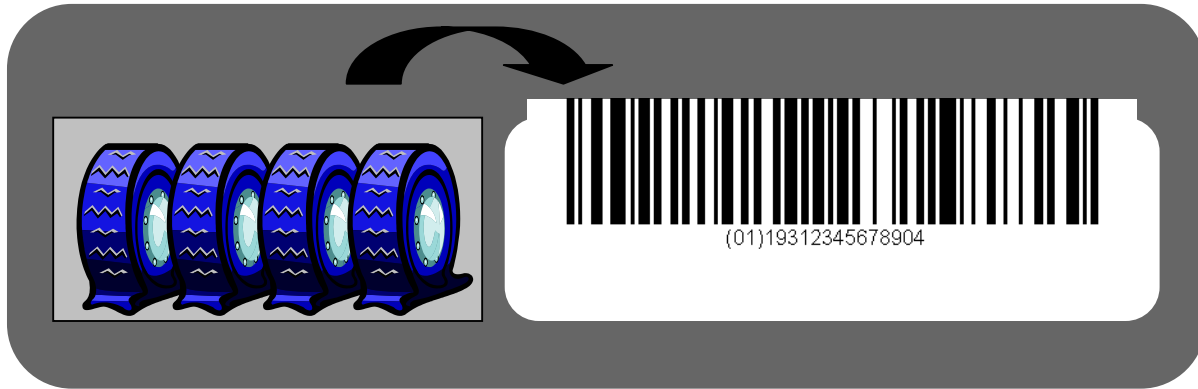
Diagram 23: A carton box with '3 x 100 Spark Plugs Type X' allocated an EAN/UCC number with a leading zero represented in an ITF-14 bar code.



Alternative Option

Example:

Diagram 24: A set of Tyres '235/40ZR18' allocated an EAN/UCC-14 number represented in a UCC/EAN 128 barcode.

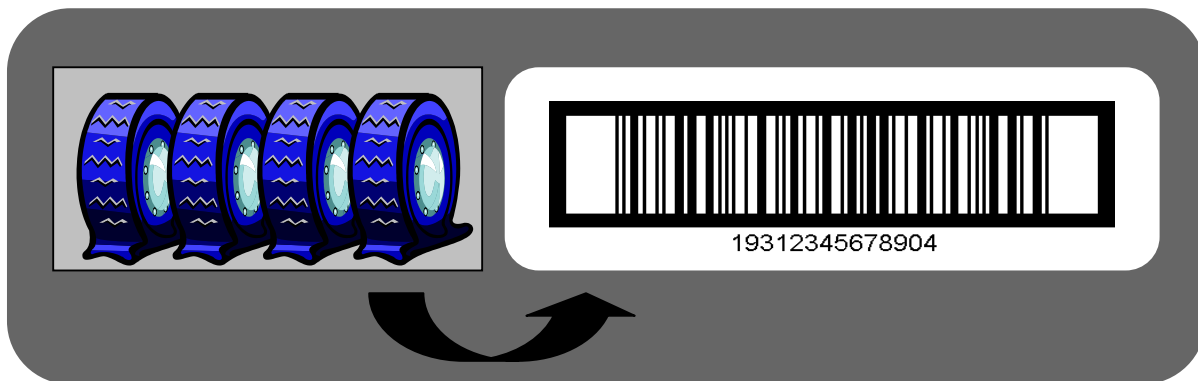


235/40ZR18

OR

Example:

Diagram 25: A set of Tyres '235/40ZR18' allocated an EAN/UCC-14 number represented in an ITF-14 barcode.





9.2.3 Variable Measure Trade Items NOT Sold at Retail Point of Sale (POS)

As described in Section 6.3 trade items may be variable measure either because the production process does not guarantee consistency in weight, size or length etc, or because the items are created to meet a special order which states a quantity (e.g. screws sold by count).

The use of a variable measure GTIN enables the identification of the variable piece of data to be included within the bar code.

Within the Automotive Aftermarket Association Industry certain trade items fall within the above mentioned definition. These include screws sold by count, cable sold by length, etc.

Note: This solution will not be available for trade items that are sold through a traditional retail point of sale environment as POS scanners are not set up to scan the UCC/EAN-128 bar code required for this application.

Example:

Diagram 26: Loose Screws sold by count – 550 Screws included



Example:

Diagram 27: Cable sold by the meter 125m



9.3 Attribute Information Options for Trade Items for the Automotive Aftermarket Industry

In “principle” the Automotive Aftermarket Industry supports the use of variable data in the long term. Individual companies need to make their own assessment on the implementation and use of variable data in their business.

Suppliers may wish to enhance the traceability of their own products by introducing additional information over and above the allocation of a GTIN to each trade item.

All attribute information must be represented in an UCC/EAN-128 bar code. When attribute information is applied to a trade item that is sold at POS then it can be added along side the EAN-13 bar code, (see below). Where the trade item will not be sold at the retail POS attribute information can be concatenated (linked together) with the GTIN, in one single UCC/EAN-128 bar code as shown in Section **Error! Reference source not found.**



Note: The attribute information, in this example Batch number, represented in the above figure will NOT scan at the point of sale.

9.4 Logistic Unit Marking for the Automotive Aftermarket Industry

The identification of standard and variable measure trade items is achieved by the allocation of unique GTIN's. The natural progression from the identification of a trade item is to the identification of a logistic unit.

As described in Section 7 a logistic unit is an item of any composition established for transport and/or storage, which need to be managed through the supply chain.

The use of the SSCC can enable the unique identification of every logistic unit. Within the Automotive Aftermarket industry sector this includes the identification of Pallets and Cartons.

There are also instances within the Automotive Aftermarket Association Industry where the allocation of a GTIN is not feasible because the resulting permutations and combination of product is limitless and is generally governed by the customer's order.



9.4.1 Special Orders Or Buy Ins

Identified within the Automotive Aftermarket Industry. '**Special Orders**' or '**Buy In**' scenarios usually occur when a customer makes a special order, which will consist of certain components that are not of a fixed configuration. Customers can select, pick and choose what is required for their specific order, these will be packed into a box or logistic unit usually by the supplier and identified using an SSCC label. This process is commonly referred to as a *Scan Pack* order.²

The Automotive Aftermarket Industry recommends that each of these individual components still have a unique identification on them, the use of a GTIN is highly recommended in this scenario, for component identification.

² Scan Pack is a process whereby, a person actually scan packs against an order, in true EDI the order is not converted into a picking slip, it is simply transmitted to a hand held terminal which enables the operator to scan each bar-coded product matching the specifics of the order.



9.5 Industry Implementation Issues

The implementation process often identifies anomalies that exist with certain product types where the standard application of the EAN•UCC standards is either not feasible or not practical. This in no way indicates that the system is not used, merely identifies that standard methodologies currently available do not fit within the scope of that particular product.

For instance the application of a GTIN to a Brake Shoe that is sold loose and not packed may not be feasible, due to the object often being quite 'greasy'. The physical application of the GTIN represented by the relevant bar code to the actual unit itself may not be realistic or practical.



10 Appendix

10.1 Bar Code Quality Check List

There are a number of aspects to printing the bar code to ensure that 100% readability is achieved and maintained.

Ensure that:

- the correct GTIN is used for the relevant trade item. Confirm this number at artwork stage and after printing has occurred.
- the height of the bar code is within the recommended ranges.
- the magnification is within the recommended ranges.
- the appropriate colours are chosen when printing the bar code.
- the contrast of the bar code is acceptable.
- the light margin areas that surround the bar code are kept free from any graphics, borders or dark colours. A useful device to help maintain the light margin in some production processes is to include a “less than” (<) and/or “greater than” (>) character in the human-readable field aligned with the edge of the light margin.
- the bar code is kept clear from any seams or seals and that no distortion is caused by taping, shrink wrapping or excessive creasing of plastic over-wrap.
- the location of the bar code on the final finished item
- the bar widths are not too wide or too narrow.
- that the bar code will remain readable in the environment in which the item will be stored, handled and distributed
- the print quality is maintained throughout the print run.
- no bar codes will show through from the inner pack.
- on going regular checks are implemented to ensure quality is maintained.

Ensure that print quality is of the highest standard maintaining bar clarity and definition and ensuring that there are no print imperfections.

Some in-house printing methods, particularly on-line ink jet printing requires attention to the total print process and on-going maintenance.

The EAN•UCC specifications for printing bar codes are explicit in that if the specified procedures are followed, with routine quality control, you can produce bar codes that scan consistently.

Note: It is recommended to get the quality of the bar codes assessed. This can be achieved through the use of the Bar Code Testing Service or becoming GS1 Accredited. Please refer to Section 10.4 for further information or contact GS1 Australia.



10.2 Global Location Numbers (GLN)

10.2.1 Introduction

On a daily basis information related to parties and locations is generated and communicated throughout the business world in vast quantities. Names and addresses are put on envelopes for the mail, the point to which a delivery is to be made is put on transport documentation, EDI network addresses are provided in an EDI message, etc. These are just a few examples of the many applications in existence today, which identify parties or locations in trade or other communications.

With the advent of electronic communication, and particularly EDI, the need for the identification of parties and locations has become more acute. The use of numeric identification instead of full alphanumeric names and addresses is key to the successful implementation of an EDI project.

Global Location Numbers (GLN) offers an internationally recognised standard solution to the identification of parties and locations.

Once assigned at source, i.e. in general by the party owning the location, the GLN becomes a unique and universal reference, which can be used by all.

10.2.2 Definition of the Global Location Number (GLN)

The GLN is a 13-digit non-significant reference number used to identify:

- Legal entities, e.g. registered companies.
- Functional entities, e.g. specific department with a legal entity.
- Physical entities, e.g. a door of a warehouse, a particular room in a building.

Global Location Numbers (GLNs) can be used to identify anything, which is, or can be addressed. Some examples of this would include companies, departments, rooms, factories, shelves, delivery points, EDI network addresses, etc.

Details associated with the GLN, e.g. name and address, location type, contact persons, communications numbers, banking information, delivery requirements or restrictions, etc., are stored in the computer files of the system users for later retrieval.

Although the GLN is strictly a reference key and does not carry any information on the location it identifies, it has a standard format and is structured to allow each GLN to be unambiguous and unique worldwide.

The format of a GLN is a 13-digit, fixed length numeric field, structured in the same way as an EAN/UCC-13 item number.

GLNs are mainly used in Electronic Data Interchange (EDI) to identify the sender and recipient of an electronic transmission and any party relevant to the transaction, e.g. buyer, seller, carrier etc.

GLNs can also be used in bar code format to identify a physical location or to encode the identification of relevant parties in logistic applications, e.g. "ship to" location number. The UCC/EAN-128 bar code and the appropriate AI should be used according to the rules specified, in the ***GS1 Australia User Manuals***.



GS1 Australia member companies that have been allocated an EAN•UCC Company Prefix for item identification can use the same EAN•UCC Company Prefix for assigning GLNs.

Companies that are not members of GS1 Australia can still use GLNs. These companies should contact GS1 Australia for further information.

10.2.3 Implementation Timing

- All companies should be identified by a Global Location Number (GLN) in all EDI messages.
- All locations (warehouse, stores, manufacturing plants, etc.) in EDI messages should be identified by Global Location Numbers (GLNs).
- During a migration period, both Global Location Numbers (GLNs) and current internal numbers can be used at the discretion of the trading partners for identifying locations.



10.3 Emerging Technologies

10.3.1 GS1 DataBar (Reduced Space Symbology (RSS))

As bar coding spreads more deeply through the supply chain and more widely into new industry sectors, users have been pressing for a number of years for bar coding technology that can be applied to very small items.

GS1 DataBar symbols are designed for use on small items where conventional bar codes would be too large to fit. Many such items are in every day use, examples include; individual doses of medication in the pharmaceutical industry, small packaged food items in the grocery trade or all manner of everyday electrical goods which have become more sophisticated with a greater number of small, electronic parts.

GS1 DataBar symbols are capable of encoding the 14 digit Global Trade Item Number (GTIN). GS1 DataBar is designed to bring the benefits of full product identification, as well as other supply chain applications, to space constrained situations where existing linear symbologies could not normally be used.

10.3.2 EPC Network & Radio Frequency Identification (RFID)

Global trade involves moving goods and tracking them around the world. EAN .UCC through their joint venture EPCglobal are rolling out and supporting adoption of the EPC network, which combines low cost RFID technology, existing communications network infrastructure and the Electronic Product Code (EPC). The EPC Network will make organisations more effective through real and timely visibility of information about items in the supply chain. The EPC network was developed by the Auto-ID Centre, a global research team directed through the Massachusetts Institute of Technology (MIT) and with labs around the world.

The EPC network incorporates global standardisation of tags and readers, a common method for describing objects Physical Markup Language (PML), middleware for the filtering and interpretation of data and an Object Naming Service (ONS) registry for locating the source of specific item information. Global standards have been developed with direct input from the GS1 community and end users.

The use of RFID technology has some advantages over bar codes in that it;

- Does not require line of sight
- Can read multiple items
- Some tags have read/write ability and have larger data storage capacity
- Some tags have additional functionality such as temperature monitoring



10.4 Services Offered by GS1 Australia

10.4.1 Introduction

A new era demands new solutions. New solutions demand new services. That's why GS1 Australia has invested heavily in a series of initiatives geared toward helping members successfully implement e-commerce based supply chain management strategies.

Through our specialised member assistance divisions: Member and Industry Support, Accreditation, EANnet and Professional Services, we are positioned to respond more efficiently to member needs.

By utilising these services as appropriate, you can gain greater control over your business and prepare for the future.

10.4.2 The Services

10.4.2.1 Member and Industry Support

The Member and Industry Support Team provide GS1's core service, enabling members to equip themselves with the knowledge needed to adopt the GS1 System successfully.

Membership of GS1 Australia allows the use of the EAN•UCC standards for supply chain management and e-commerce processes.

It also provides you, the member, with a wide range of assist services, which include education and training, information, industry guidelines, bar code verification, advice on implementation and technical support.

These services include a basic training in the Supply Chain Knowledge Centre facility. GS1 has created the ideal tool for demonstrating how supply chain management works, how it can be integrated into an existing business, and how training can help your organisation make the best possible use of resources - both human and physical.

The Supply Chain Knowledge Centre takes participants on an educational journey through the supply chain and is relevant to every sector of the economy. It demonstrates, in a clear and easily understandable manner, how sound supply chain management techniques can benefit your business and provide the foundation for current and future e-commerce strategies.

The Supply Chain Knowledge Centre is a very effective way to introduce staff to the fundamentals of supply chain management - from raw material, through manufacture, shipping and on to point of sale.

As a member, you can call on the Member and Industry Support Team as an invaluable resource for achieving greater control over day-to-day supply chain processes and business transactions.

10.4.2.2 Accreditation

GS1 Australia offers an accreditation program whose key role is to help companies with large product ranges make substantial savings in administration and distribution costs.

These can be achieved when companies meet the standards required to test their own bar codes, removing the need to continually submit new product samples to GS1 Australia, or for GS1 to provide bar code verification reports to retailers.

Savings can be considerable, but equally importantly, when the time involved in testing is reduced, new products can be brought to market with greater speed.

10.4.2.3 GS1net

Because integrity of data is crucial to e-commerce, GS1net has been developed as a secure on-line data synchronisation catalogue, holding records of significant volumes of bar-coded items, including



grocery, liquor, general merchandise, office products and much more. Each record contains a broad range of fields that include product identifiers, images, description, dimensions, barcode testing status, pricing and trading terms.

The catalogue has been created to meet the following needs:

- Allow all trading partners to synchronise data and remove errors associated with paper-based processes.
- Provide retailers and other industry stakeholders with an inexpensive means of accessing information on the total market.
- Provide a single point of entry and retrieval data repository, to enable data integrity that is essential to minimise errors in e-commerce transactions.

Notably, GS1net has already been officially endorsed by the Australian retail grocery industry.

10.4.2.4 Professional Services

The pressure to do business on-line is growing. For example, the Australian Government and many large corporations now mandate that suppliers deal on-line.

When you need accurate and up-to-date e-commerce information and advice, GS1 Australia's Professional Services Team is ready to assist, by providing strategic help and guidance. We have positioned ourselves to provide professional consulting services covering all elements of the EAN•UCC identification / bar-coding system, supply chain management issues and of course, e-commerce

GS1 consultants offer a cost-effective and relevant means to come to terms with the processes and benefits these issues offer. Professional Services can help you with:

- Project Management / Facilitation
- Tailored training programs to help your organisations make the best possible use of existing systems.
- Compliance audits of internal processes, systems and applications to meet industry requirements.
- Implementation of standards based e-commerce solutions

Professional Services also offers expanded business solutions through our Alliance Partner network.

GS1 Professional Services Advisors are experienced in all industry categories, including wholesale / retail, manufacturing, foodservices, meat, metals, building and agriculture. As a result, we can help to deliver complete end-to-end solutions by providing members with unbiased advice on hardware and software, facilitating implementation and training staff and management.

For more information on any of the above services, please contact GS1 Australia.

