

FRESH PRODUCE  
FRESH PRODUCE TRACEABILITY  
GUIDELINES  
GUIDELINES

THE KEY TO SUPPLY CHAIN MANAGEMENT



Uniform Code Council, Inc.\*



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## EXECUTIVE SUMMARY

The “Fresh Produce Traceability Guidelines” (FPT guidelines) were developed together with the EuroHandelsinstitute (EHI), European Association of Fresh Produce Importers (CIMO), Euro Retailer Produce Working Group (EUREP), European Union of the Fruit and Vegetable Wholesale, Import and Export Trade (EUCOFEL) and Southern Hemisphere Association of Fresh Fruit Exporters (SHAFFE). The FPT guidelines should be read in conjunction with the “General EAN•UCC Specifications”.

The adoption of the FPT guidelines is voluntary. They define the minimum requirements for the traceability of fresh produce. The guidelines apply to products subject to custom code nomenclature starting with the digits 07 and 08.

The aim of the guidelines is to provide a common approach to tracking and tracing of fresh produce by means of an internationally accepted numbering and bar coding system – the EAN•UCC system. The degree to which companies will implement this guideline may vary because of differences in commercial operations. However, the use of common identification and communication standards will significantly improve the accuracy and speed of access to information about the production and provenance of fresh produce.

### LIMITATION OF THE GUIDELINES

The FPT guidelines specifically address EAN•UCC numbering and bar coding for the purpose of tracking and tracing fresh produce. They provide recommendations and guidance needed to understand and implement the EAN•UCC system of numbering and bar coding of trade units (e.g. cartons, boxes or bins) and logistics units (e.g. pallets). The guidelines do not address the numbering and bar coding of consumer units (e.g. loose or pre-packed produce). They do not address the use of EANCOM® messages, which will be covered in a separate document.

This guideline will be amended whenever deemed necessary by a committee representing the FPTP participants; subsequent to which the updated edition will be published. The FPT guidelines are fully consistent with commercial and inter-governmental arrangements for the identification of fresh produce where the EAN•UCC system is also being adopted. The use of EAN•UCC standards is subject to the “General EAN/UCC Specifications” and membership in EAN International or the Uniform Code Council, Inc.

### DISCLAIMER

While every possible effort has been made to ensure that the information in these guidelines is correct, CIMO, EAN International, EHI, EUCOFEL, EUREP, SHAFFE and UCC disclaim all liability for any errors or omissions in these guidelines.

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Miodrag MITIC - Fresh Produce Traceability - Project Manager EAN International

## INTRODUCTION

Consumer safety has become one of the most critical and priority issues for the food supply chain. Despite the best efforts by fresh produce supply chain participants food safety problems may never be completely excluded. However, an effective and cost-efficient traceability system can pinpoint such a problem to a specific region, packing facility, group of growers, a grower or even a field, rather than an entire commodity group. Narrowing the potential scope of a problem is in line with legal requirements and can reduce the negative economic impact on the supply chain participants who are not responsible for its occurrence.

From a public health perspective, improving the speed and accuracy of tracking and tracing implicated food items can help limit the risk in a food safety issue. Rapid and effective traceability can also minimise the unnecessary expenditure of private and public resources and reduce consumer concerns. Furthermore, tracing implicated food items may help public health services and industry operators in determining potential causes of a problem, thereby providing data to identify and minimise health hazards.

Traceability is fundamental particularly with the impact food safety incidents and concerns have on consumers, companies, commodity groups, governments and trade. Because of the diversity of international produce supply chain practices, it is critical that growers, packers, importers/exporters, and logistics providers work with their partners in distribution and retail to develop technologies and standards that allow identification to follow produce from the field to the retailer. Agreed upon procedures and standards for produce identification and documentation will enable a quick and automated tracking of individual produce trade units from farm to the retail.

Implementation of public and private traceability systems by means of automated data capture, electronic data processing and electronic communications can significantly improve accuracy and speed of access to information about the production and provenance of food. They can reduce risk and uncertainty both across the supply chain and between trading partners. This however requires a holistic view of the food supply chain, which is only attainable by deploying international business standards.

## GLOBAL SUPPLY CHAIN STANDARDS

The reason for using internationally accepted business standards is to overcome the barriers to commerce that national, industry and company specific standards create when they are used in place of international multi-industry standards. Trading, tracking and tracing goods becomes more expensive because of the need to fulfil different identification and communication requirements of each importing country or company. The key to designing cost-effective and efficient traceability systems is to satisfy different customer and legal requirements by applying one global standard.

The EAN•UCC system enables efficient supply chain management and international trade by providing standard tools that allow all produce supply chain participants to communicate in one global language of business. Key concepts driving EAN•UCC system application can be summed-up in three areas:

- Automation of business processes by means of automated data capture (ADC) and electronic data processing (EDP).
- Communication of information in the fastest and most accurate manner by means of standard electronic messages that automatically update computer applications with data from trading partners.

- Time compression, which offers strategic opportunities to improve customer satisfaction, not just by efficient produce traceability, but also by reengineering business processes across the supply chain.

Automation significantly increases productivity and reduces the amount of paper-based administration and associated costs. It also eliminates the inevitable errors resulting from manual data entry and processing. Electronic communication enables companies to better manage and control their business cycle and results in improved logistics management. Time compression increases customer service responsiveness and helps to restore consumer confidence in the event of a product recall.

#### FRESH PRODUCE TRACEABILITY PROJECT

Traceability systems are used for accurate and timely identification of products, their origin, location within the supply chain and efficient recall. Furthermore, they help determine the origin of a food safety problem, comply with legal requirements and meet the consumers' expectations for the safety and quality of purchased products.

EuroHandelsinstitute (EHI), European Association of Fresh Produce Importers (CIMO), Euro Retailer Produce Working Group (EUREP), European Union of the Fruit and Vegetable Wholesale, Import and Export Trade (EUCOFEL) and Southern Hemisphere Association of Fresh Fruit Exporters (SHAFFE) recognise the necessity to adopt a common identification, communication, and traceability standard.

Under the co-ordination of EAN International, they have established the Fresh Produce Traceability Project (FPTP). The project team developed the "Fresh Produce Traceability Guidelines" (FPT Guidelines) to enable efficient identification of sources of defects, as well as the identification and separation of defective produce.

The guidelines provide fresh produce supply chain actors with a global traceability system for products subject to custom code nomenclature starting with the digits 07 and 08. They provide a guide for fresh produce growers, packers, logistic providers, exporters/importers, and distributors as well as their customers and suppliers, seeking to introduce EAN•UCC standards to efficiently implement an internationally agreed upon traceability system:

- The first and second section explain the rationale for EAN•UCC system application by illustrating the fresh produce supply chain traceability model and EAN•UCC traceability tools.
- Section three specifies the FPT guidelines and how to apply EAN•UCC standards to comply with them.
- The appendices provide a practical insight into the implementation of the EAN•UCC system.

## I. FRESH PRODUCE SUPPLY CHAIN TRACEABILITY MODEL

The objective of this model is to explain traceability in the fresh produce supply chain by examining the physical and information flows, and determining relevant EAN•UCC standards to be deployed.

Traceability requires a verifiable method to identify growers, fields and produce in all its packaging and transport/storage configurations at all stages of the supply chain. Identification numbers must be applied and accurately recorded guaranteeing a link between them.

Tracking and tracing of food has generated a significant amount of interest and debate. It is important to distinguish between legal requirements, technologies required for providing a track and trace capability, and EAN•UCC standards. The EAN•UCC system enables efficient food safety management, but it is the responsibility of individual companies and supply chains to voluntarily take advantage of the capabilities it provides.

In discussing traceability capabilities provided by EAN•UCC standards, it is important that the distinction between the terms tracking and tracing is made clear. The agreed definition of each term in the FPT model is presented below:

- Product tracking is the capability to follow the path of a specified unit of a product through the supply chain as it moves between organisations. Products are tracked routinely for obsolescence, inventory management and logistical purposes. In the context of the FPT guidelines, current interest focuses on tracking produce from the grower to retail in unmodified logistic units.
- Product tracing is the capability to identify the origin of a particular unit and/or batch of product located within the supply chain by reference to records held upstream in the supply chain. Products are traced for purposes such as product recall and investigating complaints. In the context of the FPT guidelines, current interest focuses on tracing produce in unmodified trade units from retail to grower.

### Links between successive trade unit and logistic unit configurations

Identification numbers must be accurately applied and recorded guaranteeing a link between successive packaging and transport/storage configurations. It is the responsibility of each company to manage the links between what they are delivered by their suppliers, produce alteration processes and what they are shipping to their customers.

### Accurate and timely record keeping

Some data must be systematically transmitted between partners in the supply chain, while other data must only be recorded. It is up to the trading partners to decide the data to systematically transmit.

### Batch composition

The efficiency of any traceability system depends on the weakest link in the supply chain. Batch composition is a critical point in this process. It determines the accuracy of any traceability system. The more homogeneous the batches are, the more accurate the traceability system.

### Electronic communication of traceability data

Traceability data may be transmitted by electronic means, such as EDI messages or XML, and related to the logistic units' identification number – the Serial Shipping Container Code (SSCC).

## Traceability model

The model represents the:

- Physical flows (arrow) in the fresh produce supply chain. Only the steps where a transformation takes place are taken in account.
- Information flows (broken arrows) that accompanies the physical flows to assure traceability.

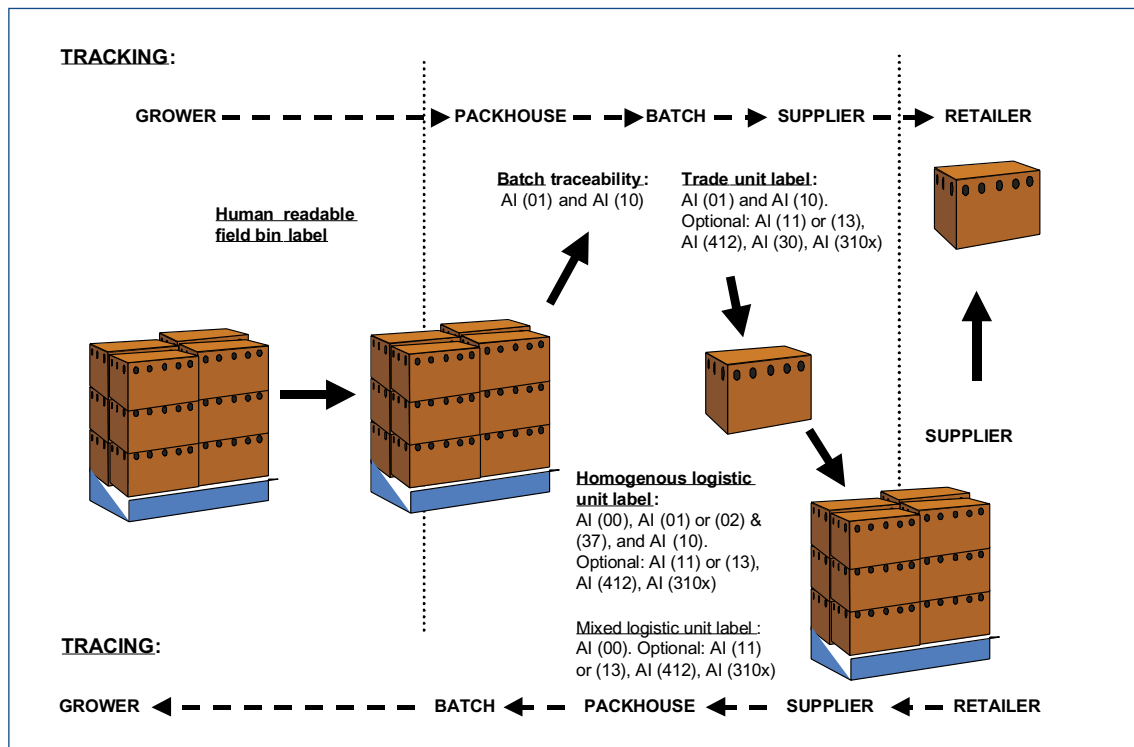


Figure 1 - Fresh produce supply chain traceability model

## II. EAN•UCC TRACEABILITY TOOLS

The introduction of EAN•UCC standards can improve the efficiency of recording and exchanging information between supply chain participants. When used in conjunction with databases containing accurate and timely records, EAN•UCC standards provide all supply chain participants with the technical capability to see the origin of a product, both in their own locations and across the entire supply chain.

EAN•UCC standards carry data, which allow supply chain participants to track and trace products. The application of these standards requires growers, packers, importers/exporters, carriers, distributors and retailers to keep records of serial numbers of logistics units (SSCC), identification numbers (GTIN) and attribute information of traded units and location numbers of their origin (GLN). Record keeping enables the growers and packers to provide the traceability data needed by importers/exporters and distributors, as well as their customers. The ability to convert this capability to practical benefits requires bilateral agreements to share corresponding inventory information.

## EAN•UCC GLOBAL TRADE ITEM NUMBERS

At the simplest level, item numbering is what the name suggests – a system for identifying items by giving each one a unique number. Numbering can be applied at every stage of production and distribution. It is used to identify products and services. While the most visible aspect of item numbering is the bar code, it is only a machine-readable representation of a number. It is the number, which is the most important element in the EAN•UCC system, because the number identifies the item to which it is assigned.

The EAN•UCC numbering system provides for global uniqueness and overcomes problems in confusion, duplications and misinterpretation, because all users of the EAN•UCC system follow the same coding rules. An EAN•UCC number can be recognised not only by local trading partner companies, but by companies operating overseas as well. Each EAN•UCC number is unique worldwide, so there is no possibility of confusion. The EAN•UCC numbering system also provides the ability for items to also carry, within the numbering convention, extra or attribute information pertaining that the item.

## EAN•UCC BAR CODES

Bar codes are carriers of data. The barcode is used in the EAN•UCC system to represent EAN•UCC numbers. In simple terms, a bar code consists of a series of parallel, adjacent bars and spaces. Predetermined width patterns are used to represent actual data in the bar code. This data can be the item number or attribute information relating to the item. A bar code reader (scanner) is moved across the barcode from one side to the other, in doing so the width pattern of the bars and spaces is analysed by the reading equipment and the original data are recovered. It allows real-time data to be collected accurately and rapidly.

EAN•UCC bar codes allow automatic data capture, which is a key business solution in an efficient supply chain. The EAN•UCC numbering and bar coding system allows fast accurate and timely data input into computer systems, automating the flow of information into business processes. It also enables improved data capture and transfer of information, while reducing costs.

## EAN•UCC GLOBAL LOCATION NUMBERS

A Global Location Number (GLN) is a numeric code that identifies any legal, functional or physical entity within a business or organisation. Each location is allocated a unique number. The EAN•UCC-13 numbering structure is used for the identification of locations.

## DEFINITIONS OF CONSUMER, TRADE AND LOGISTICS UNITS

For your convenience, please find below definitions of consumer, trade and logistics unit. They enable a common understanding of terms used in the next section, the Fresh Produce Traceability guidelines:

### DEFINITION OF A CONSUMER UNIT

A retail item, or more commonly known as a consumer unit, is any item intended for sale to the final consumer through a retail point of sale. Any item that can be considered both a retail item (consumer unit) and a non-retail item (trade unit) is numbered and bar coded according to the rules applicable to retail items. The FPTP guideline does not address the identification, bar coding and traceability of retail items (pre-packed or loose).

#### DEFINITION OF A TRADE UNIT

A non-retail item, or more commonly known as a trade unit, and hereafter referred to in this document as a trade unit, is any item or standard grouping of items made up to facilitate the operations of handling, storing, order preparation, shipping, etc.

A trade unit can be a box, case, a bulk bin, a pallet or any similar type of packaging created for the purpose of shipping and handling. A trade unit can contain a single type of item or in some cases a standard mix of different items.

#### DEFINITION OF A LOGISTICS UNIT

A logistic unit is an item of any composition established for transport and/or storage, which need to be managed through the supply chain. Logistic units, which need to be tracked and traced individually across any supply chain, require a unique identification number.

#### DEFINITION OF ATTRIBUTE INFORMATION

Attribute information is any variable information required over and above the trade unit or logistics unit identification, such as batch number. In the EAN•UCC system, this information is expressed by means of EAN•UCC Application Identifiers (AI). Attribute information is bar coded in the UCC/EAN-128 bar code symbology.

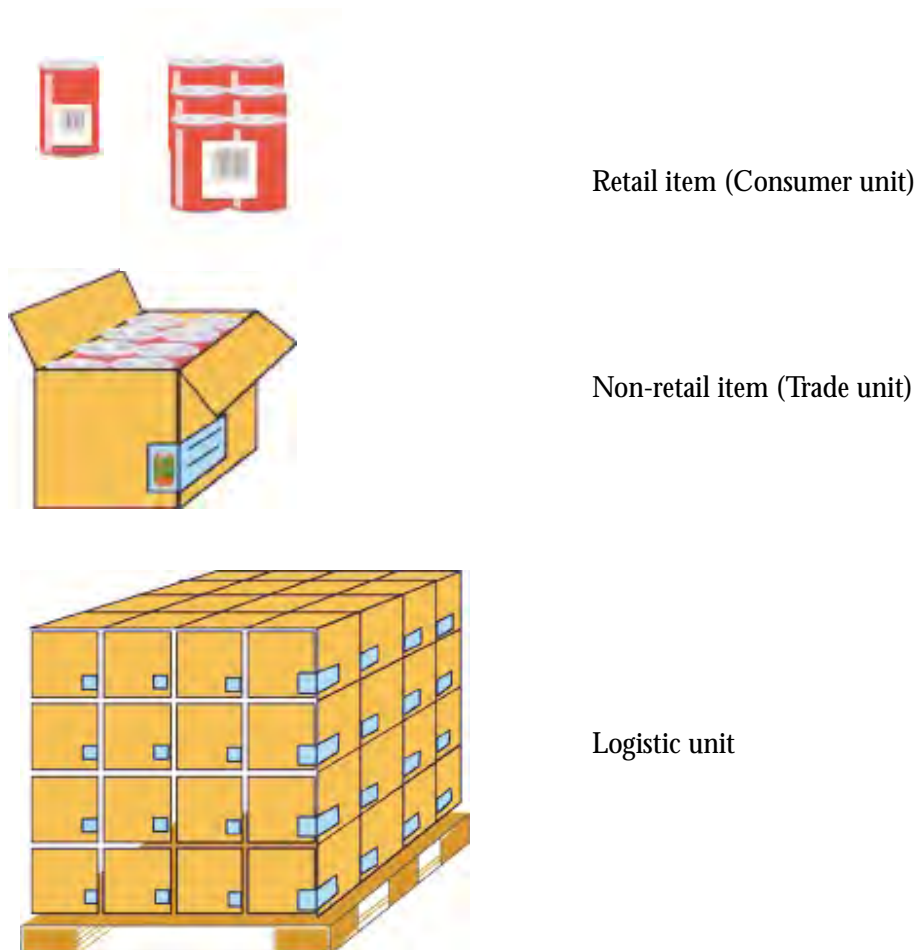


Figure 2 – Difference between retail-item, non-retail item and logistic unit

### III. FRESH PRODUCE TRACEABILITY GUIDELINES

#### 1. IDENTIFICATION OF LOCATIONS

Traceability requires the identification of all physical entities (locations) where fresh produce originates from and where it is packed and stored. These include, but are not limited to fields, growers, packers, carriers, wholesalers and retailers.

The identification of locations is also required to enable an efficient flow of goods and information between partners through EDI messages to identify the parties involved in a transaction (e.g. buyer, supplier, place of delivery, place of departure).

EAN•UCC Global Location Numbers (GLN) are a key concept in supply chain management. The EAN•UCC-13 numbering structure is used for the identification of locations. Global location numbers are equally represented in bar code format and used for information on logistic units and to enable the bar coding of actual locations (fields, goods inward, warehouse shelving, etc.).

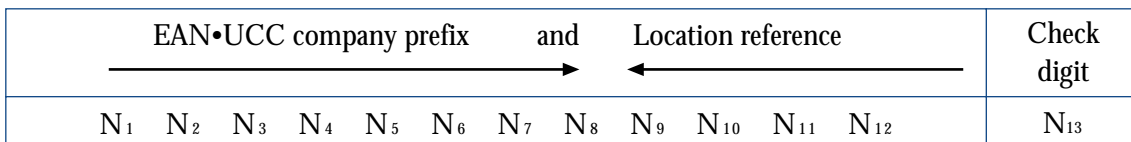


Figure 3 - GLN numbering structure

Traded and logistics units should carry the GLN of the pack house they were packed in. Each physical location of a pack house should be assigned a GLN. Alternatively, the physical location of a pack house can be determined by a combination of a Global Trade Item Number (GTIN) and associated batch number on a traded unit or the Serial Shipping Container Code (SSCC) on a logistic unit .

#### 2. IDENTIFICATION OF TRADE AND LOGISTIC UNITS

Traceability requires the identification of fresh produce in all its packaging and transport/storage configurations at all the stages of the supply chain. Identification numbers must be applied to all trade and logistics units in both human readable and bar coded format. The leading period for the introduction of bar codes on traded units is subject to agreement between trading partners and should be a minimum of 12 months.

##### 2.1. IDENTIFICATION OF TRADE UNITS

A trade unit 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 the supply chain. This includes individual items as well as all their different configurations.

The normal rule for EAN•UCC numbering is that the supplier of the product assigns the Global Trade Item Number (GTIN). However, when a product is packed specifically for a customer and orderable only by this customer, it is then permissible for a GTIN to be assigned by the customer.

EAN•UCC numbers are unique, non-significant, multi-industry, international and secure. EAN International has developed the GTIN to uniquely identify trade items world-wide. It contains up to 14 digits expressed in four different variations: EAN•UCC-14, EAN•UCC-13,

UCC-12 and EAN•UCC-8. The table below the structure of the GTIN.

Numbering Structures	14-digit Global trade Item Number (GTIN) *													
	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>	N <sub>12</sub>	N <sub>13</sub>	N <sub>14</sub>
EAN•UCC-14	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>	N <sub>12</sub>	N <sub>13</sub>	N <sub>14</sub>
EAN•UCC-13	0	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>	N <sub>12</sub>	N <sub>13</sub>
UCC-12	0	0	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>	N <sub>12</sub>
EAN•UCC-8	0	0	0	0	0	0	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>

\*Note: This is the file format for the GTIN, which is used in all business transactions.

Figure 4 – Global Trade Item numbering structure

## 2.2. IDENTIFICATION OF LOGISTICS UNIT

The Serial Shipping Container Code (SSCC) provides an unambiguous identification for logistic units. All parties in the packaging supply chain can use it as a reference number to the relevant information held in computer files. The SSCC is a non-significant, fixed-length, 18-digit number, which contains no classifying elements.

Extension digit	EAN•UCC company prefix	and	Item reference	Check digit
N <sub>1</sub>	N <sub>2</sub> N <sub>3</sub> N <sub>4</sub> N <sub>5</sub> N <sub>6</sub> N <sub>7</sub> N <sub>8</sub> N <sub>9</sub> N <sub>10</sub> N <sub>11</sub> N <sub>12</sub> N <sub>13</sub> N <sub>14</sub> N <sub>15</sub> N <sub>16</sub> N <sub>17</sub>			N <sub>18</sub>

Figure 5 - SSCC numbering structure

The extension digit is assigned by the user according to internal needs. The company prefix is allocated to an EAN•UCC system user by an EAN International Member Organisation or UCC. The logistic units reference number is assigned by the user and is structured according to internal needs. The check digit is calculated according to the EAN•UCC algorithm.

The UCC/EAN-128 symbology and the associated EAN•UCC Application Identifiers are used to represent the SSCC and any additional data required, in machine-readable form. The Application Identifier 00 precedes the SSCC.

## 3. THE EAN•UCC LOGISTICS LABEL

The EAN•UCC Logistics Label is used to identify pallets or other logistics units carrying trade items. It uniquely identifies the logistic unit for administration and logistics purposes and provides article identification for the unit, or its contents, together with additional manufacturer and customer information in machine-readable form.

The non-significance of the SSCC allows any logistics unit to be identified by any supply chain participant, regardless of the business sector or geographical location. The EAN•UCC Logistics Label is fully compatible with ISO 15394 and EN 1573 standards.

The EAN•UCC Logistics Label provides a link between the physical flow of goods (using EAN•UCC numbers and bar codes) and electronic information flow (using EANCOM® messages).

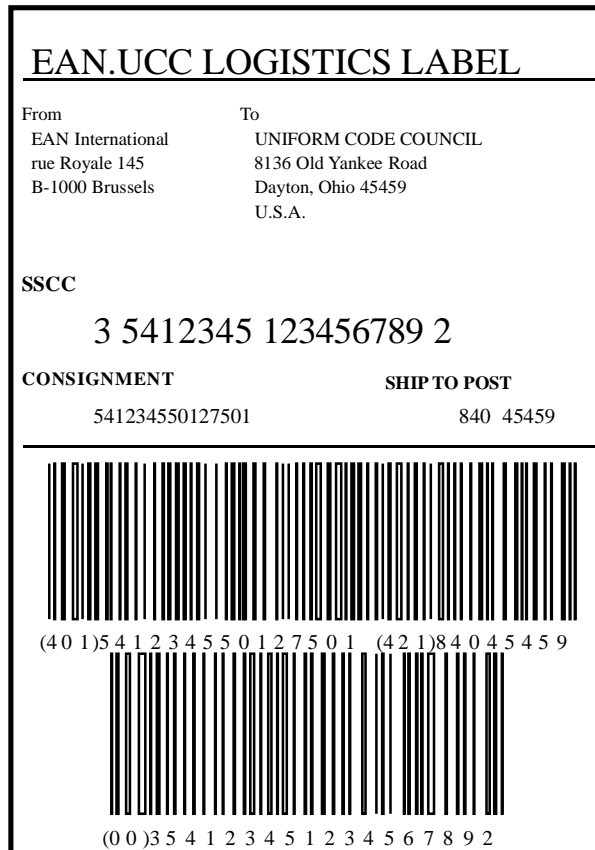


Figure 6 - Example of an EAN•UCC Logistics Label

#### 4. BAR CODING OF TRADE AND LOGISTIC UNITS

EAN•UCC numbers identifying fresh produce trade and logistics units are represented by UCC/EAN-128 bar codes. This allows for the identification numbers and attribute data to be machine-read for automated data capture and data processing. The use of UCC/EAN-128 symbology is not intended for data scanned at point of sale.

The UCC/EAN-128 symbology, a sub-set of Code 128, is one of the most complete, compact and reliable alphanumeric linear symbologies available today. UCC/EAN-128 uses a special non-data character known as function 1 (FNC 1) following the start character in the bar-code. According to International Standard ISO/IEC 15417, the use of FNC 1 immediately following the start character in Code 128 is exclusively reserved for EAN•UCC.



Figure 7 - Example of UCC/EAN-128 bar code

## 5. TRADE AND LOGISTICS UNIT ATTRIBUTE DATA

An EAN•UCC Global Trade Item Number (GTIN) may be used alone on a trade unit. Where additional information is required to be bar coded using the UCC/EAN-128 bar code, the appropriate EAN•UCC Application Identifier (AI) must accompany the GTIN.

An AI is a prefix used to define the meaning and format of the information following in a data field. Application Identifiers have been defined for product and logistics unit identification, traceability data, dates, quantity, measurements, locations, and many other types of information. The use of EAN•UCC AIs is subject to rules established by EAN•UCC. EAN International has been designated the organisation responsible for the maintenance of these AIs.

The Fresh Produce Traceability Project defined the requirements for attribute information to be bar coded on trade and logistics units. Other human readable information may be printed on the trade and logistic unit labels, which may not be bar coded. These requirements, some of which may be legal requirements, have not been included in this document and are left to the discretion of trading partners. The attribute information to be bar coded and corresponding AI's are as follows:

### 5.1. Application Identifiers used on a trade unit (e.g. box, carton)

Mandatory Application Identifiers:

- Global Trade Item Number (GTIN) – AI 01
- Batch Number – AI 10

Optional Application Identifiers:

- Dates – AI 11 or AI 13
- Variable Weight – AI 31nn
- Variable Count – AI 30
- Purchased from GLN – AI 412





(01)18931234567894(10)24



(412)6110123456784(30)12

Figure 8 - Trade unit bar code example

## 5.2. APPLICATION IDENTIFIERS USED ON A LOGISTICS UNIT (E.G. PALLET)

### 5.2.1. Application Identifiers used on a homogenous logistics unit

Mandatory Application Identifiers:

- Serial Shipping Container Code – AI 00
- Global Trade Item Number (GTIN) – AI 01 or GTIN of Trade Items Contained in a Logistics Unit – AI 02 and Count of Trade Item Contained in Logistics Unit
- AI 37
- Batch Number – AI 10

Optional Application Identifiers:

- Dates – AI 11 or AI 13
- Purchased from GLN – AI 412
- Variable Weight – AI 31nn



(01)18931234567894(10)24



(13)011125(412)5412345678908(3102)001220



Figure 9 – Homogenous logistics unit bar code example

### 5.2.2. Application Identifiers used on a mixed logistics unit

Mandatory Application Identifiers:

- Serial Shipping Container Code – AI 00

Optional Application Identifiers:

- Dates – AI 11 or AI 13
- Purchased from GLN – AI 412
- Variable Weight – AI 31nn

## 5.3. DEFINITIONS OF MANDATORY AND OPTIONAL APPLICATION IDENTIFIERS

### 5.3.1. Identification of a Logistic Unit (AI 00)

Definition: Identification number (SSCC) of a logistic unit.

Format of the Element String						
Serial Shipping Container Code						
Application Identifier	Extension digit	EAN•UCC Company Prefix			Serial Reference	Check digit
		→			←	
(EAN)	0 0	N <sub>1</sub>	N <sub>2</sub> N <sub>3</sub> N <sub>4</sub> N <sub>5</sub> N <sub>6</sub> N <sub>7</sub> N <sub>8</sub> N <sub>9</sub> N <sub>10</sub> N <sub>11</sub> N <sub>12</sub> N <sub>13</sub> N <sub>14</sub> N <sub>15</sub> N <sub>16</sub> N <sub>17</sub>		N <sub>18</sub>	
(UCC)	0 0	N <sub>1</sub>	0 N <sub>3</sub> N <sub>4</sub> N <sub>5</sub> N <sub>6</sub> N <sub>7</sub> N <sub>8</sub> N <sub>9</sub> N <sub>10</sub> N <sub>11</sub> N <sub>12</sub> N <sub>13</sub> N <sub>14</sub> N <sub>15</sub> N <sub>16</sub> N <sub>17</sub>		N <sub>18</sub>	

The Application Identifier 00 indicates that the data field contains the Serial Shipping Container Code (SSCC). The Extension digit is used to increase the capacity of the SSCC. It is assigned by the company that constructs the SSCC. The EAN.UCC Company Prefix is assigned to the system user. It makes the number unique worldwide but does not identify the origin of the unit. The Serial Reference is a serial number which the company that has been assigned the EAN.UCC Company Prefix chooses how to structure. The Check Digit is explained in the General EAN/UCC Specifications. Its verification, which must be carried out in the application software, ensures that the number is correctly composed. System considerations: The system recognises this Element String by the Symbology Identifier ]C1 and the Application Identifier. Data carrier: UCC/EAN-128 symbology. The data transmitted from the bar code reader means

that the identification number of a logistic unit has been captured.

### 5.3.2. Identification of a Trade Item - Fixed Measure (AI 01)

Definition: Identification number (GTIN) of a Fixed Measure Trade Item. This Element String is based on the UCC-12 or EAN/UCC-8 or EAN/UCC-13 or EAN/UCC-14 Data Structure.

Format of the Element String																
Application Identifier	EAN•UCC trade item identification number												Check digit			
(EAN/UCC-8)	0	1	0	0	0	0	0	0	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>
(UCC-12)	0	1	0	0	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>	N <sub>12</sub>
(EAN/UCC-13)	0	1	0	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>	N <sub>12</sub>	N <sub>13</sub>
(EAN/UCC-14)	0	1	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>	N <sub>12</sub>	N <sub>13</sub>	N <sub>14</sub>

The Application Identifier 01 indicates that the data field contains the identification number of a trade item (GTIN). The EAN.UCC trade item identification number contains the EAN/UCC-8, UCC-12 and EAN/UCC-13 Identification Numbers. The Check Digit is explained in Chapter 3, Appendix 1. Its verification, which must be carried out in the application software, ensures that the number is correctly composed. System considerations: The system recognises this Element String by the Symbology Identifier |C1 and the Application Identifier. Data carrier: UCC/EAN-128 symbology. The data transmitted from the bar code reader means that a quantity of one with the identification number of a Fixed Measure Trade Item has been captured.

T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>	T <sub>10</sub>	T <sub>11</sub>	T <sub>12</sub>	T <sub>13</sub>	T <sub>14</sub>
0	0	0	0	0	0	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>
0	0	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>	N <sub>12</sub>
0	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>	N <sub>12</sub>	N <sub>13</sub>
N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>	N <sub>12</sub>	N <sub>13</sub>	N <sub>14</sub>

The formats of these numbers for processing in a 14-digit field

### 5.3.3. Identification of a Trade Item - Variable Measure (AI 01)

Definition: Identification number (GTIN) of a Variable Measure Trade Item. This Element String is a special application of the EAN/UCC-14 Data Structure.

Format of the Element String																	
Application Identifier	Identification number of the trade item												Check digit				
	Indicator	EAN•UCC Company Prefix						Item Reference									
(UCC-12)	0	1	9	0	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>	N <sub>12</sub>	N <sub>13</sub>	N <sub>14</sub>
(EAN/UCC-13)	0	1	9	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>	N <sub>12</sub>	N <sub>13</sub>	N <sub>14</sub>

The Application Identifier 01 indicates that the data field contains a trade item identification number (GTIN). The digit 9 in field Indicator indicates that the item identified is a Variable Measure Trade Item. The EAN.UCC Company Prefix and the Item Reference are as described the General EAN/UCC Specifications. The Check Digit is explained in Chapter 3, Appendix 1. Its verification, which must be carried out in the application software, ensures that the number is correctly composed. Data carrier: UCC/EAN-128 symbology. System considerations: The system recognises this Element String by the Symbology Identifier ]C1, the Application Identifier and the digit 9 in the Indicator field. The data transmitted from the bar code reader means that the EAN/UCC-14 Identification Number of a Variable Measure Trade Item has been captured. To complete the item identification the variable information (see Chapter 3,

T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>	T <sub>10</sub>	T <sub>11</sub>	T <sub>12</sub>	T <sub>13</sub>	T <sub>14</sub>
9	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>	N <sub>12</sub>	N <sub>13</sub>	N <sub>14</sub>

The formats of these numbers for processing in a 14-digit field

**5.3.4. Identification of Trade Items Contained in a Logistic Unit - Fixed Measure (AI 02)**

Definition: Identification number (GTIN) of the Fixed Measure Trade Items contained in a logistic unit. Note: This Element String may be used only on a unit which is not itself a trade item and if all trade items that are contained at the same level have the same GTIN.

Format of the Element String		
Application Identifier	GTIN of the contained trade items	Check digit
0 2	N <sub>1</sub> N <sub>2</sub> N <sub>3</sub> N <sub>4</sub> N <sub>5</sub> N <sub>6</sub> N <sub>7</sub> N <sub>8</sub> N <sub>9</sub> N <sub>10</sub> N <sub>11</sub> N <sub>12</sub> N <sub>13</sub>	N <sub>14</sub>

The Application Identifier 02 indicates that the data field shows the identification number of the trade items contained. The GTIN of the trade items contained represents the identification number of the highest level of trade item contained in the logistic unit. The Check Digit is explained in Chapter 3, Appendix 1. Its verification, which must be carried out in the application software, ensures that the number is correctly composed. Data carrier: UCC/EAN-128 symbology. System considerations: The system recognises this Element String by the Symbology Identifier ]C1 and the Application Identifier. The data transmitted from the bar code reader means that the identification number of Fixed Measure Trade Items contained in a logistic unit has been captured. It must be processed together with Element String AI 37 that must appear on the same.

**5.3.5. Identification of Trade Items Contained in a Logistic Unit - Variable Measure (AI 02)**


Definition: Identification number (GTIN) of the Variable Measure Trade Items contained in a logistic unit. Note: This Element String may be used only on a unit which is not itself a trade item and if all trade items that are contained at the same level have the same GTIN. If the trade items are variable measure retail items then this GTIN will be the implied item number that does not appear on the items contained.

Format of the Element String		
Application Identifier	GTIN of the contained trade item	Check digit
0 2	9 N <sub>2</sub> N <sub>3</sub> N <sub>4</sub> N <sub>5</sub> N <sub>6</sub> N <sub>7</sub> N <sub>8</sub> N <sub>9</sub> N <sub>10</sub> N <sub>11</sub> N <sub>12</sub> N <sub>13</sub>	N <sub>14</sub>

The Application Identifier 02 indicates that the data field shows the identification number of the contained trade items. The GTIN of the trade items contained represents the identification number of the highest level of items contained in the logistic unit. The Check Digit is explained in Chapter 3, Appendix 1. Its verification, which must be carried out in the application software, ensures that the number is correctly composed. Data carrier: UCC/EAN-128 symbology. System considerations: The system recognises this Element String by the Symbology Identifier JC1 and the Application Identifier. The data transmitted from the bar code reader means that the EAN/UCC-14 Identification Number of a Variable Measure Trade Item contained in a logistic unit has been captured. It must be processed with Element String AI 37 and a valid trade measure that must appear on the same unit.

### 5.3.6. Batch or Lot Number (AI 10)

Definition: Batch or lot number of a trade item.

Format of the Element String	
Application Identifier	Batch or lot number
1 0	X <sub>1</sub>  X <sub>20</sub>

The Application Identifier 10 indicates that the data field contains a batch or lot number. The batch or lot number gives whatever information the manufacturer (the party with responsibility for traceability of the trade item) considers relevant to the trade item to which the Element String is applied. The data may refer to the trade item itself or to items contained. The number may be a production lot number, a shift number, a machine number, a time, an internal production code, etc. The data is alphanumeric and may include all characters contained in Table 1 of the International Standard ISO/IEC 646, shown in Chapter 3, Appendix 3. Data carrier: UCC/EAN-128 symbology. System considerations: The system recognises this Element String by the Symbology Identifier JC1 and the Application Identifier. The data transmitted by the bar code reader means that the Element String "batch or lot number" has been captured. As it is an attribute of a particular item it should not be processed on its own, but together with the GTIN of the trade item to which it relates. Note: The batch or lot number is not part of the unambiguous identification of a trade item.

### 5.3.7. Production Date (AI 11)

Definition: Production date of a trade item.

Format of the Element String			
Application Identifier	Production date		
	Year	Month	Day
1 1	N <sub>1</sub> N <sub>2</sub>	N <sub>3</sub> N <sub>4</sub>	N <sub>5</sub> N <sub>6</sub>

The Application Identifier 11 indicates that the data fields contain a production date. The production date is the production or assembly date determined by the manufacturer. The date may refer to the trade item itself or to items contained.

The structure is:

- Year      The tens and units of the year (e.g. 2003 = 03), which is mandatory.
- Month     The number of the month (e.g. January = 01), which is mandatory.
- Day        The number of the day of the relevant month (e.g. 2nd day = 02). If it is not necessary to specify the day, the field must be filled in with two zeros.

Data carrier: UCC/EAN-128 symbology. System considerations: The system recognises this Element String by the Symbology Identifier JC1 and the Application Identifier. The data transmitted from the bar code reader means that the Element String "production date" has been captured. As it is an attribute of a trade item it should not be processed on its own, but together with the GTIN of the trade item to which it relates. Note: This Element String can only specify dates in the range from 49 years in the past to 50 years in the future. Determination of the correct century is explained in the General EAN/UCC Specifications.

#### 5.3.8. Packaging Date (AI 13)

Definition: Packaging date of a trade item.

Format of the Element String			
Application Identifier	Packaging date		
	Year	Month	Day
1 3	N <sub>1</sub> N <sub>2</sub>	N <sub>3</sub> N <sub>4</sub>	N <sub>5</sub> N <sub>6</sub>

The Application Identifier 13 indicates that the data fields contain a packaging date. The packaging date is the date when the goods were packed as determined by the packager. The date may refer to the trade item itself or to items contained. The structure is:

- Year      The tens and units of the year (e.g. 2003 = 03), which is mandatory.
- Month     The number of the month (e.g. January = 01), which is mandatory.
- Day        The number of the day of the relevant month (e.g. 2nd day = 02). If it is not necessary to specify the day, the field must be filled in with two zeros.

Data carrier: UCC/EAN-128 symbology. System considerations: The system recognises this Element String by the Symbology Identifier JC1 and the Application Identifier. The data transmitted from the bar code reader means that the Element String "packaging date" has been captured. As it is an attribute of a trade item it should not be processed on its own, but together with the GTIN of the trade item to which it relates.

#### 5.3.9. Variable Count (AI 30)

Definition: Count of items contained in a Variable Measure Trade Item. This Element String is used to complete the identification of a Variable Measure Trade Item. It contains the number of items contained in such a unit and, therefore, should never be applied in isolation.

Format of the Element String	
Application Identifier	Count of items
3 0	N <sub>1</sub> ————— variable length —————> N <sub>8</sub>

The Application Identifier 30 indicates that the data field contains the number of items contained in a Variable Measure Trade Item. The field count of items represents the quantity contained in the respective trade item. It is of variable length and may have up to 8 digits. Data carrier: UCC/EAN-128 symbology. System considerations: The system recognises this Element String by the Symbology Identifier ]C1 and the Application Identifier. The data transmitted from the bar code reader means that the quantity (count of items) which can be considered part of the identification of a Variable Measure Trade Item has been captured. It must be processed with the identification number of the trade item to which it relates. Note: This Element String must not be used to indicate the contained quantity of a Fixed Measure Trade Item. However, if this Element String appears on a Fixed Measure Trade Item (in error) it should not invalidate the item identification but should be treated as redundant data.

#### 5.3.10. Trade Measures (AI 31nn, 32nn, 35nn, 36nn)

Definition: Trade measures of Variable Measure Trade Items. This Element String is used to complete the identification of a Variable Measure Trade Item. It contains information on weight, size, volume, dimensions, etc. of such unit and, therefore, should never be applied alone. Several Element Strings are possible if the variables required are dimensions or weights expressed in kg and pounds.

Format of the Element String	
Application Identifier	Applicable value
A <sub>1</sub> A <sub>2</sub> A <sub>3</sub> A <sub>4</sub>	N <sub>1</sub> N <sub>2</sub> N <sub>3</sub> N <sub>4</sub> N <sub>5</sub> N <sub>6</sub>

The Application Identifier digits A1 to A3 (see Figure 3 - 39) indicate that the data field contains the quantity or dimension of a Variable Measure Trade Item. It also denotes the unit of measure. The Application Identifier digit A4 indicates the implied decimal point position, where the digit 0 means that there is no decimal point and the digit 1 means that the decimal point is between N5 and N6, etc. The Application Identifiers used with this Element String are the following:

A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	Definition of Trade Measures	Unit of Measure
3	1	0	Net weight	Kilograms
3	1	1	Length or first dimension	Metres
3	1	2	Width, diameter or second dimension	Metres
3	1	3	Depth, thickness, height or third dimension	Metres
3	1	4	Area	Square Metres
3	1	5	Net volume	Litres
3	1	6	Net volume	Cubic Metres
3	2	0	Net weight	Pounds

A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	Definition of Trade Measures	Unit of Measure
3	2	1	Length or first dimension	Inches
3	2	2	Length or first dimension	Feet
3	2	3	Length or first dimension	Yards
3	2	4	Width, diameter or second dimension	Inches
3	2	5	Width, diameter or second dimension	Feet
3	2	6	Width, diameter or second dimension	Yards
3	2	7	Depth, thickness, height or third dimension	Inches
3	2	8	Depth, thickness, height or third dimension	Feet
3	2	9	Depth, thickness, height or third dimension	Yards
3	5	0	Area	Square Inches
3	5	1	Area	Square Feet
3	5	2	Area	Square Yards
3	5	6	Net weight	Troy Ounces
3	5	7	Net weight	Ounces
3	6	0	Net volume	Quarts
3	6	1	Net volume	Gallons (U.S.)
3	6	4	Net volume	Cubic Inches
3	6	5	Net volume	Cubic Feet
3	6	6	Net volume	Cubic Yards

The field applicable value contains the variable measure that applies to the respective trade item. Data carrier: UCC/EAN-128 symbology. System considerations: The system recognises this Element String by the Symbology Identifier ]C1 and the Application Identifier. The data transmitted from the bar code reader means that the quantity, which can be considered part of the identification of a Variable Measure Trade Item, has been captured. It must be processed with the GTIN of the trade item to which it relates. Note: Other values of AI 3nnn specify gross measures and logistic measures.

#### 5.3.11. Count of Trade Items Contained in a Logistic Unit (AI 37)

Definition: Count of trade items contained in a logistic unit. This Element String is a mandatory completion of the identification described in Chapter 3, Sections 6.4 and 6.5.

The Application Identifier 37 indicates that the data field contains the number of trade items contained in a logistic unit. The field count of trade items contains the number of trade items contained in the respective logistic unit. This information refers to the identification number of the contained trade items. Data carrier: UCC/EAN-128 symbology. System considerations: The system recognises this Element String by the Symbology Identifier ]C1 and the Application Identifier. The data transmitted from the bar code reader means that the number of trade items contained in a logistic unit has been captured. It must be processed with the identification number represented in AI 02 (see Chapter 3, Section 6.4 and 6.5) appearing on the same logistic unit.

Format of the Element String	
Application Identifier	Count of trade items
3 7	N <sub>1</sub> ————— variable length —————> N <sub>8</sub>

### 5.3.12. "Purchased from" EAN.UCC Global Location Number (AI 412)

Definition: EAN.UCC Global Location Number (GLN) of the supplier of the respective trade item. This Element String is based on the EAN/UCC-13 Data Structure.

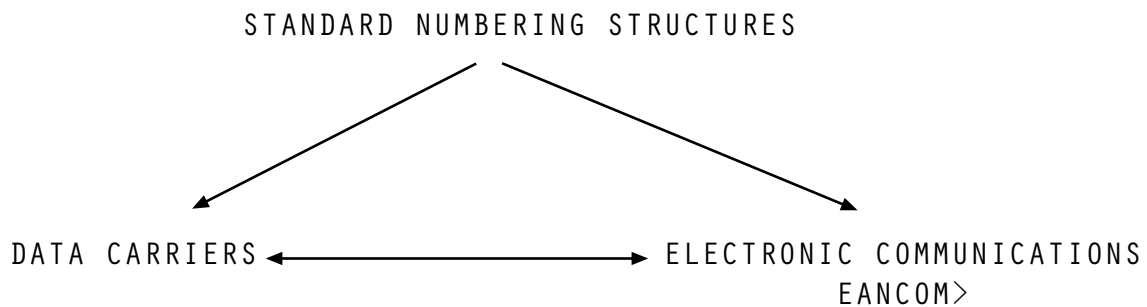
Format of the Element String		
Application Identifier	$\xrightarrow{\text{EAN}\cdot\text{UCC company prefix}}$ $\xleftarrow{\text{Location Reference}}$	Check digit
4 1 2	$N_1 N_2 N_3 N_4 N_5 N_6 N_7 N_8 N_9 N_{10} N_{11} N_{12}$	$N_{13}$

The Application Identifier 412 indicates that the data field contains the EAN.UCC Global Location Number of the company the respective trade item had been purchased from. The EAN.UCC Company Prefix is the EAN.UCC Company Prefix of the supplier. It is a component of the EAN/UCC-13 Data Structure to make the number unique worldwide. The Location Reference is assigned by the company supplying the trade item. The Check Digit is explained in Chapter 3, Appendix 1. Its verification, which must be carried out in the application software, ensures that the number is correctly composed. Data carrier: UCC/EAN-128 symbology. System considerations: The system recognises this Element String by the Symbology Identifier ]C1 and the Application Identifier. The data transmitted from the bar code reader means that the location number of the company that supplied the trade item has been captured. It may be processed independently or together with related identifications.

## ANNEX

### PRINCIPLES OF THE EAN•UCC SYSTEM

The EAN•UCC System is a set of tools, which facilitates business transactions and electronic commerce. It provides a standard way to identify and track and trace products, services, and locations. The aim is to improve supply chain management and other business transactions that reduce costs or add value for both goods and services. Established in 1977, EAN International and its global partner organisation for the USA and Canada, the Uniform Code Council (UCC), today have more than 850.000 member companies in over 140 countries.



## THE EAN•UCC SYSTEM

The EAN•UCC System provides for the use of unambiguous numbers to identify goods, services, assets and locations world-wide. These numbers can be represented in bar code symbols to enable their electronic reading wherever required in business processes. The system is designed to overcome the limitations of using company, organisation or sector specific coding systems, and to make trading much more efficient and more responsive to customers.

As well as providing unique identifying numbers, the system also provides for additional information such as best before dates, serial numbers, location numbers and batch numbers to be shown in a bar coded form. These identifying numbers are also used in electronic commerce. At the moment bar code symbols are used as data carriers but other technologies, such as radio frequency identification tags and two-dimensional bar codes will be added in the future.

Following the principles and design of the EAN•UCC System means that users can design applications to process EAN•UCC data automatically. The system logic guarantees that data captured from bar codes produces unambiguous electronic messages and processing of them can be fully pre-programmed. The system is designed to be usable in any industry or trade sector.

## GETTING STARTED

### Where do I start?

Contact your local EAN International Member Organisation (national EAN organisation) and register as a member. Construct Global Trade Item Numbers and/or Global Location Numbers and/or Serial Shipping Container Codes using your national EAN prefix in combination with the EAN member organisation number allocated to you. Communicate your intentions to all trading partners that will read EAN•UCC bar codes representing the above numbers and/or EANCOM® EDI messages.

### What does it cost to become an EAN member?

Membership costs vary from one country to another and in general depend on the numbering capacity and the services required. However, EAN membership fees are low. They usually consist of an annual fee and a one-time joining fee.

### What do I get in return?

A member company receives an EAN member organisation ID number, a capacity to number its products and basic support in implementing the EAN•UCC system. The numbering capacity given to member companies depends on their requirements and can be in the range between 1.000 and 100.000. Should a company wish to use EDI via EANCOM® messages, it can request the necessary information and manuals from its national EAN organisation.

### How do I administer the number bank allocated to me by an EAN International Member Organisation?

When you join an EAN International Member Organisation, it will provide you with the necessary documentation to administer the numbering system. It is advisable that all companies centrally allocate product numbers.

### How do I print EAN•UCC bar codes on labels?

Label composition software should permit you to use desktop laser or ink jet printers, or you can use specially designed high performance thermal direct or thermal transfer printers. These may be self-

contained units able to print pre-programmed label formats, or may require to be driven by a PC. Alternatively, labels can be printed off-site by a supplier that specialises in this type of printing.

**Do I have to become a member of an EAN International Member Organisation in every country I operate in?**

No. One national EAN organisation membership should meet all the identification and communication needs of a company. However, if there is a need for continuous national EAN organisations support in other countries (i.e., in the local language) it is then advisable to seek membership in those countries too.

**Do I need to become a member of an EAN International Member Organisation to use UCC/EAN-128?**

Yes. Membership in an EAN International Member Organisation or UCC is required to use EAN•UCC data structures. These data structures are represented in EAN•UCC data carriers (bar codes), which are in the public domain. If you are not already a member of an EAN Member Organisation, you will have to do so if you wish to use the UCC/EAN-128. If you are already a member of an EAN Member Organisation, your annual membership fee includes support concerning all EAN standards, including UCC/EAN-128.

**Is UCC/EAN-128 used only to identify pallets?**

No, it is being used in for the identification of trade units, identification and tracking and tracing of logistics units (mainly pallets) and assets, as well as encoding of additional information, such as batch numbers, production or best before dates, etc. Many other applications also utilise the UCC/EAN-128 specification.

## FURTHER READING – PUBLICATIONS AVAILABLE FROM EAN INTERNATIONAL

Computer Assisted Ordering (CAO) - How to use the EAN standards.  
Continuous Replenishment - How to use the EAN standards.  
Corporate Brochure – The Global Language of Business  
Customer Specific Articles User Profile  
EAN International Annual Report and EAN•UCC Directory  
EAN Location Numbers. A Key Concept in Communication  
EAN Training interactive CD  
EAN•UCC Logistics Label and the SSCC  
EAN•UCC Solutions for Payment Processes  
EAN•UCC Solutions for the Textile and Apparel Industry  
EANCOM® 1997 MANUALS (volumes I-IV)  
EANCOM® 1997 CD-Rom  
EANCOM® an International Standard for EDI Communication  
Electronic Catalogues – EAN Recommendations  
Electronic Commerce in the EAN Community 1998.  
E-Commerce Tools for the Transport Industry  
Flow Through Distribution - How to use the EAN standards.  
Identifying Products and services with the EAN.UCC system  
Introduction to EANCOM® in Trade and Finance  
Introduction to EANCOM® in Trade and Transport  
Introduction to EDI  
Introduction to the Serial Shipping Container Code  
RSS and composite symbology  
Security for EANCOM® Messages  
Solutions for Supply Chain Management : Application Identifiers & the Traceability of Beef Guidelines  
UCC/EAN 128 symbology  
Supply Chain Management Tools for the Packaging Industry  
The Application of EANCOM® for the Trade of Healthcare Products  
The Application of EANCOM® for the Trade of Shoe Products  
The role of EAN in ECR

## ORGANISATIONS SPONSORING THE FRESH PRODUCE TRACEABILITY PROJECT

### [CIMO – European Association of Fresh Produce Importers](#)

Avenue de Broqueville 272 box 4, 1200 Brussels, Tel: +32-2777.15.80, Fax: +32-2-777.15.81, E-mail: [secretariat@cimo.be](mailto:secretariat@cimo.be)

### [EAN International](#)

Rue Royale 145, 1000 Brussels, Tel: +32-2-227.10.20, Fax: +32-2-227.10.21, e-mail: [info@ean-int.org](mailto:info@ean-int.org)

#### EUREP – Euro Retail Produce Working Group

EHI-EuroHandelsinstitut, Spichernstrasse 55, D-50672 Köln, Germany  
Tel: +49 / 2 21 / 5 79 93 –25, Fax: +49 / 02 21 / 5 79 93-45, e-mail:  
moller@ehi.org

#### EUCOFEL - European Union of the Fruits and Vegetables Wholesale Imports and Exports Trade

Rue Jenneval 29, 1000 Brussels, Tel: +32-2-736.16.54, Fax: +32-2-732.17.47  
e-mail: eucofel.fruittrade.org@skynet.be

#### SHAFFE – Sothern Hemishpere Association of Fresh Fruit Exporters

Avenue de Broqueville 272 box 4, 1200 Brussels, Tel: +32-2777.15.80, Fax:  
+32-2-777.15.81, e-mail: ph.binard@euronet.be

### DIRECTORY OF EAN INTERNATIONAL MEMBER ORGANISATIONS AND UCC

Please see [www.ean-int.org](http://www.ean-int.org) for the latest update of the EAN International Member Organisations directory.

### GLOSSARY OF TERMS USED IN THE GENERAL EAN/UCC SPECIFICATIONS

Add-On Symbol	EAN/UPC Symbol used to encode information supplementary to that in the main EAN/UPC Symbol.
AI	Abbreviation for Application Identifier.
AIDC	Automatic Identification and Data Capture
alphanumeric (an)	Describes a character set that contains alphabetic characters (letters), numeric digits (numbers), and other characters, such as punctuation marks. Normally used to indicate the permissible characters in a UCC/EAN-128 Bar Code Symbol.
ANSI	American National Standards Institute.
aperture	A physical opening that is part of the optical path in a device such as a scanner, photometer, or camera. Most apertures are circular, but they may be rectangular or elliptical.
Application Identifier	The field of two or more characters at the beginning of an Element String encoded in a UCC/EAN-128 Symbol, which defines uniquely its format and meaning.
ASC x12	Accredited Standards Committee X12. ASC X12 is responsible for developing American National Standards for EDI.
Asset Type	A number assigned by the owner of an asset to uniquely identify a type of asset.
attribute	A piece of information reflecting a characteristic related to an identification number (e.g., GTIN and GRAI).
autodiscrimination	This term describes the capability of a reader to automatically recognise and decode multiple bar code symbologies.
bar gain/loss	The increase/decrease in bar width due to effects of the reproduction and printing processes.

Bearer Bars	Bars surrounding a bar code to prevent misreads or to improve print quality of the bar code symbol.
billing unit	An item which is priced and invoiced in trade between two parties at any point in the supply chain.
brand owner	The party that is responsible for allocating EAN.UCC numbering and bar coding on a given trade item. The administrator of an EAN.UCC Company Prefix.
carrier	The party that provides freight transportation services.
Check Digit	A digit calculated from the other digits of an Element String, used to check that the data has been correctly composed. (See EAN.UCC Check Digit Calculation.)
Clear Area	See Quiet Zone.
Company Number	A component of the EAN.UCC Company Prefix. EAN and UCC assign EAN.UCC Company Prefixes to entities that administer the allocation of EAN.UCC identification numbers. These entities may be commercial companies, not for profit organisations, governmental agencies, business units within organisations, etc. Criteria to qualify for the assignment of an EAN.UCC Company Prefix are set by the EAN Member Organisations and the UCC.
concatenation	The representation of several Element Strings in one bar code symbol.
contrast	See Symbol Contrast.
coupon	A voucher which can be redeemed at the point of sale for a cash value or free item.
customer	The party that receives, buys, or consumes an item or service.
data carrier	A means to represent data in a machine readable form, used to enable automatic reading of the Element Strings.
data character	A letter, digit, or other symbol represented in the data field(s) of an Element String.
data field	The smallest part of the data part of an Element String which needs to be distinguished.
Data Standard	The entirety of all EAN.UCC System data standardised in meaning and structure.
data structure	The UCC and EAN numbering structures defined in the various lengths required for the different identification purposes which all share a hierarchical composition. Their composition blends the needs of international control with the needs of the users.
data titles	A standard abbreviated description of a data field and used to denote the Human Readable Interpretation of encoded data.
direct print	A process in which the printing apparatus prints the symbol by making physical contact with a substrate, for example, flexography.
DUN-14 (Despatch Unit Number)	See EAN/UCC-14.
EAN	See EAN International.
EANCOM®	The international EDI standard provided by EAN International, conforming to the UN/EDIFACT standard.
EAN International	EAN International, based in Brussels, Belgium, is an organisation of EAN Member Organisations that jointly manages the EAN.UCC System with the UCC.

EAN Member Organisation	A member of EAN International that is responsible for administering the EAN.UCC System in its country (or assigned area) and for managing the correct use of the EAN.UCC System by its member companies.
EAN-8 Bar Code Symbol	A bar code symbol of the EAN/UPC Symbology that encodes EAN/UCC-8 Identification Numbers.
EAN-13 Bar Code Symbol	A bar code symbol of the EAN/UPC Symbology that encodes EAN/UCC-13 Identification Numbers.
EAN.UCC Check Digit Calculation	EAN.UCC algorithm for the calculation of a Check Digit to verify accuracy of data decoded from a bar code symbol.
EAN.UCC Company Prefix	Part of the international EAN.UCC Data Structures consisting of an EAN.UCC Prefix and a Company Number, both of which are allocated by either the UCC or an EAN International Numbering Organisation.
EAN.UCC Prefix	A number with two or more digits, co-administered by EAN International and the UCC, denoting the format and meaning of a particular Element String.
EAN.UCC System	The specifications, standards, and guidelines co-administered by EAN International and the UCC.
EAN/UCC-8 Data Structure	The eight-digit EAN.UCC Data Structure composed of an EAN/UCC-8 Prefix, Item Reference, and Check Digit.
EAN/UCC-8 Identification Number	The EAN.UCC Identification Number comprising eight digits used to identify trade items and special applications.
EAN/UCC-8 Prefix	A one-, two-, or three-digit index number, co-administered by EAN International and the UCC, denoting the area of distribution of trade items identified by an EAN/UCC-8 Identification Number.
EAN/UCC-13 Data Structure	The 13-digit EAN.UCC Data Structure composed of an EAN.UCC Company Prefix; Item Reference, Location Reference, or Asset Type; and Check Digit.
EAN/UCC-13 Identification Number	The EAN.UCC Identification Number comprising 13 digits used to identify trade items, locations, and special applications (e.g., coupons).
EAN/UCC-14 Data Structure	The 14-digit EAN.UCC Data Structure composed of an Indicator an EAN.UCC Company Prefix; an Item Reference, and a Check Digit.
EAN/UCC-14 Identification Number	The EAN.UCC Identification Number comprising 14 digits; used to identify trade items.
EAN/UPC Symbology	A family of bar code symbols including EAN-8, EAN-13, UPC-A and UPC-E versions. Although UPC-E Symbols do not have a separate Symbology Identifier, they act like a separate symbology through the scanning application software. See also EAN-8 Bar Code Symbol, EAN-13 Bar Code Symbol, UPC-A Bar Code Symbol, and UPC-E Bar Code Symbol.
EDI	Electronic Data Interchange.
Electronic Commerce	The conduct of business communications and management through electronic methods, such as electronic data interchange and automated data collection systems.
Electronic Message	A composition of Element Strings from scanned data and transaction information assembled for data validation and unambiguous processing in a user application.
Element String	A piece of data defined in structure and meaning, comprising an identification part (prefix or Application Identifier) and a data part, represented in an EAN.UCC System endorsed data carrier.

even parity	A characteristic of the encodation of an EAN/UPC Symbol Character whereby the Symbol Character contains an even number of dark modules.
Extension digit	A digit, allocated by the user, used to increase the capacity of the Serial Reference within the SSCC.
fixed length	Term used to describe a data field in an Element String with an established number of characters.
Fixed Measure Trade Item	An item always produced in the same pre-defined version (type, size, weight, contents, design, etc.) that may be sold at any point in the supply chain.
FNC1	Abbreviation for Function 1 Character.
Full String	The data transmitted by the bar code reader from reading a data carrier, including Symbology Identifier and Element String(s).
Function 1 Character	A Symbol Control Character used to form the double start pattern of a UCC/EAN-128 Bar Code Symbol. It is also used to separate certain concatenated Element Strings, dependent on their positioning in the bar code symbol.
General Distribution Scanning	Including unattended, fixed mount scanning environments, where items are scanned automatically as they pass by on a conveyor.
GIAI	Shorthand term for the EAN.UCC Global Individual Asset Identifier.
GLN	Shorthand term for the EAN.UCC Global Location Number using the EAN/UCC-13 Data Structure to identify physical, functional, or legal entities.
GRAI	Shorthand term for the EAN.UCC Global Returnable Asset Identifier.
GSRN	Shorthand term for the EAN.UCC Global Service Relation Number.
GTIN	Shorthand term for the EAN.UCC Global Trade Item Number. A GTIN may use the EAN/UCC-8, UCC-12, EAN/UCC-13 or EAN/UCC-14 Data Structure.
GTIN Format	The format in which GTINs must be represented in a 14-digit reference field (key) in computer files to ensure uniqueness of the identification numbers.
Guard Bar Pattern	An auxiliary pattern of bars/spaces corresponding to start or stop patterns in bar code symbologies, and serving to separate the two halves of EAN-8, EAN-13 and UPC-A Symbols.
Human Readable Interpretation	Characters that can be read by persons, such as letters and numbers, as opposed to Symbol Characters within bar codes that are read by machines.
human translation	Text designed to support manual operations and to facilitate key entry in menu driven systems. Data titles and data content are included.
Indicator	A digit to complete a particular identification number or to add some sort of significance to a particular Element String.
Individual Asset	An entity which is part of the inventory of given company. (See also Returnable Asset.)
Interleaved 2 of 5	See ITF-14 Symbol.
Inverse Exponent	The Application Identifier digit that denotes the implied decimal point position in an Element String.
ISO	International Organization for Standardization
Item Number	See Item Reference.
Item Reference	The part of the data structure allocated by the user to identify a trade item for a given EAN.UCC Company Prefix.
Item Reference Number	See Item Reference.

ITF Symbol	The "Interleaved 2 of 5" Symbology.
ITF-14 Symbol	An ITF Symbol used by the EAN.UCC System to carry EAN/UCC-14 Identification Numbers.
LAC	(Local Assigned Code) A particular use of the UPC-E Bar Code Symbol for restricted distribution.
Light Margin	See Quiet Zone.
Light Margin Indicator	See Quiet Zone Indicator.
Location Number	See GLN.
Location Reference	A number within a GLN assigned by various parties to identify a different entity.
logistic measures	Measures indicating the outside dimensions, total weight, or volume inclusive of packing material of a Logistic Unit. Also known as gross-measures.
Logistic Unit	An item of any composition established for transport and/or storage that needs to be managed through the supply chain.
magnification	Different sizes of bar codes based on a nominal size and a fixed aspect ratio; stated as a percent or decimal equivalent of a nominal size.
Manufacturer's Number	See EAN.UCC Company Prefix.
Manufacturer's ID	See EAN.UCC Company Prefix.
module	The narrowest nominal width unit of measure in a bar code. In certain symbologies, element widths may be specified as multiples of one module. Equivalent to X-dimension.
modulo	An arithmetic scheme in which the result is the remainder after division.
Modulo 103	A number that results from a modulo calculation that is encoded in the UCC/EAN-128 Symbol as a self-checking Symbol Character. It is created automatically by software as a symbol overhead character and is not expressed in the Human Readable Interpretation.
UCC/EAN-128 Symbol Check Character	
Numbering Organisation (NO)	See EAN Member Organisation.
Number System Character	See UCC Prefix.
odd parity	A characteristic of the encodation of an EAN/UPC Symbol Character whereby the Symbol Character contains an odd number of dark modules.
Packaging Indicator	See Indicator.
Packaging Type	See Extension digit.
POS	Point-of-sale. Refers to the retail type checkout where EAN/UPC Bar Code Symbols are normally scanned.
print gain/loss	See bar gain/loss
printability gauge	A series of specially calibrated marks printed on to a substrate to assess or monitor the quality of printing.
Quiet Zone	A clear space containing no machine readable marks, which precedes the start character of a bar code symbol and follows the stop character. Formerly referred to as "Clear Area" or "Light Margin."
Quiet Zone Indicator	A 'greater than' (>) or 'less than' (<) character, printed in the human readable field of the bar code symbol, with the tip aligned with the outer edge of the Quiet Zone.
Refund Receipt	A voucher produced by equipment handling empty containers (bottles and crates).

restricted distribution	Signifies that such system data may be applied on goods to be processed only in certain environments, defined by the UCC or the appropriate EAN International Member Organisation, such as a country, company, industry, etc.
Returnable Asset	A reusable entity owned by a company, used for transport and storage of goods.
RZSC	(Retailer Zero Suppression Code) A particular use of the UPC-E Bar Code Symbol for restricted distribution.
scanner	An electronic device to read bar code symbols and convert them into electrical signals understandable by a computer device.
Separator Character	Function 1 Character used to separate certain concatenated Element Strings, dependent on their positioning in the UCC/EAN-128 Bar Code Symbol.
Serial Reference	The part of the data structure allocated by the user in conjunction with the Extension digit that establishes a unique SSCC for a given EAN.UCC Company Prefix.
Serial Shipping Container Code	See SSCC.
SSCC	The unique identification of a logistic unit using an 18-digit data structure.
SSCC Serial Number	See Serial Reference.
Standard numbering structures	See data structure.
substrate	The material on which a bar code symbol is printed.
supplier	The party that produces, provides, or furnishes an item or service.
symbol	The combination of symbol characters and features required by a particular symbology, including Quiet Zone, Start and Stop Characters, data characters, and other auxiliary patterns, which together form a complete scannable entity; an instance of a symbology and a data structure.
symbol character	A group of bars and spaces in a symbol which is decoded as a single unit. It may represent an individual digit, letter, punctuation mark, control indicator, or even multiple data characters.
Symbol Check Character	A symbol character included within a UCC/EAN-128 Symbol, the value of which is used by the bar code reader for the purpose of performing a mathematical check to ensure the accuracy of the scanned data. It is not shown in Human Readable Interpretation characters. It is not input to the bar code printer and is not transmitted by the bar code reader.
Symbol Contrast	An ISO 15416 parameter that measures the difference between the largest and smallest reflectance values in a scan reflectance profile.
Symbol Control Character	See symbology element.
symbology	A defined method of representing numeric or alphabetic characters in a bar code. (A type of bar code.)
symbology element	A character or characters in a bar code symbol used to define the integrity and processing of the symbol itself, for example, start and stop patterns. These elements are symbology overhead and are not part of the data conveyed by the bar code.
Symbology Identifier	A sequence of characters transmitted with the decoded data that identifies the data carrier from which the data has been decoded.

trade item	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.
trade measures	Net measures of Variable Measure Trade Items as used for invoicing (billing) the trade item.
transaction type	Information (not part of the EAN.UCC System) denoting the particular operation in connection with which the scanned data has been captured.
truncation	Printing a symbol shorter than the symbology specification's minimum height recommendations. Truncation can make the symbol difficult for an operator to scan.
UCC	See Uniform Code Council.
UCC Company Prefix	Part of the UCC-12 Data Structure consisting of a UCC Prefix and a Company Number allocated by the UCC.
UCC/EAN-128 Bar Code Symbol	A subset of the Code 128 Bar Code Symbol that is utilized exclusively for UCC.EAN defined data structures.
UCC/EAN-128 Coupon Extended Code	A supplemental bar code that can be printed on a coupon next to the primary U.P.C. Coupon Code, to provide additional information, such as Offer Codes, expiration dates, and household identification numbers.
UCC Prefix	A one-digit index number administered by the UCC, denoting the format and meaning of a particular Element String contained within the UCC-12 Numbering Structure.
UCC-12 Data Structure	The 12-digit EAN.UCC Data Structure composed of a UCC Company Prefix, Item Reference, and Check Digit.
UCC-12 Identification Number	The EAN.UCC Identification Number comprising 12 digits used to identify trade items, locations, and special applications (e.g., coupons).
Uniform Code Council	The Uniform Code Council (UCC), based in the United States, is a membership organization that jointly manages the EAN.UCC System with EAN International. The UCC also administers the EAN.UCC System in the United States and Canada.
unrestricted distribution	Signifies that such system data may be applied on goods to be processed anywhere in the world without restraint as to country, company, industry, etc.
UPC-A Bar Code Symbol	A bar code symbol of the EAN/UPC Symbology that encodes UCC-12 Identification Numbers.
UPC-E Bar Code Symbol	A bar code symbol of the EAN/UPC Symbology representing a UCC-12 Identification Number in six explicitly encoded digits using zero suppression techniques.
validation of data	Verification of scanned data to determine whether it meets the application rules for system logic and consistency and/or a particular user's requirements, prior to processing in EDP applications.
Variable Measure Trade Item	An item always produced in the same pre-defined version (type, design, packaging, etc.) that may be sold at any point in the supply chain, which either may vary in weight/size by its nature or which may be traded without a pre-defined weight/size/length.
wide-to-narrow ratio	The ratio between the wide elements and the narrow elements in a bar code symbology, such as ITF, which has two different element widths.
X-dimension	The specified width of the narrow element in a bar code symbol.