EDIFICE The Global Network for B2B Integration in High Tech Industries

EDIFICE Guideline
Global Unique Identification

of

COMPANIES (GUIC)

ORGANISATIONAL (SUB-) UNITS (GUIO)

LOCATIONS (GUIL)

PRODUCTS (GUIP)

SERIAL NUMBERS (GUIS)

TRACEABILITY NUMBERS (GUIT)

RETURNABLE TRANSPORT ITEMS (GUIR)

GROUPINGS OF TRANSPORT UNITS (GUIG)

Issue 3

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Publication Summary

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Abstract:	This numbering scheme turns each company's proprietary identification numbers into world wide unique identifiers by adding a prefix defined by the ISO/IEC 15459 standard. For use in linear barcodes or 2D codes, appropriate data identifiers are defined.

Comment:	Comments and change requests to this document should be submitted to: EDIFICE secretariat dora.cresens@edifice.org
References:	EDIFICE ADC Glossary Issue 1 EDIFICE License Plate Implementation Guideline Issue 6 EDIFICE RFID Guideline Issue 1 ANS MH10.8.2 Data Identifier & Application Identifier Standard ISO/IEC 15418 Information Technology, EAN/UCC Application Identifiers and FACT Data Identifiers and Maintenance ISO/IEC 15459-1 Information technology - Unique identifiers - Part 1: Unique Identifiers for Transport Units ISO/IEC 15459-2 Information technology - Unique identifiers – Part 2: Registration Procedures ISO/IEC 15459-3 Information technology - Unique identifiers – Part 3: Common rules for unique identifiers ISO/IEC 15459-4 Information technology - Unique identifiers – Part 4: Unique identifiers for supply chain management ISO/IEC 15459-5 Information technology - Unique identifiers – Part 5: Unique identification of returnable transport items (RTI) ISO/IEC CD 15459-6 Information technology - Unique Identification - Part 6: Groupings

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Comparison to previous issue

Changes in Issue 3 compared to Issue 2 endorsed on 1 June 2006 are :

- Document Title extended to include the Groupings of Transport Units covered by ISO/IEC 15459-6.

- Addition of 'Groupings of Transport Units' in sections:
    o 2. Definitions
    o 3. Data Element Structure
    o 4. Machine readable representation

- Addition of a paragraph and a section that addresses encoding of unique identifiers in high capacity ADC media and in an RFID tag

- Removal of the NEN list of Issuing Agencies.

- Updated Label examples

Changes in Issue 2 compared to Issue 1 endorsed on 26 May 2004 are :

- Document Title extended to include the Returnable Transport Items covered by the revised ISO/IEC 15459.

- References to ISO/IEC 15459 Standard Part 1 – Part 5

- Addition of 'Returnable Transport Unit' in sections:
    o 2. Definitions
    o 3. Data Element Structure
    o 4. Machine readable representation

- Update of the NEN list of Issuing Agencies.

1 Introduction

In business processes between trading partners (i.e. B2B processes), the exchange of various information prior to, accompanying and following the physical flow of goods has become more and more important. This information may be exchanged electronically and/or via documents, labels and RFID tags.

The information that is exchanged includes, but is not limited to, information about products, parties and locations.

To efficiently handle these processes electronically, there is a need for unique identification of the different entities and data elements. This especially applies to product and party identification, as these are key data elements in trade, logistics and manufacturing processes.

1.1 Purpose

The EDIFICE guideline for the *Global Unique Identification* scheme defines the entities, the structure and the syntax rules that have to be applied to create globally unique numbers for these entities.

The method applied is based upon the International Standard ISO/IEC 15459 series for *"Information Technology – Unique Identifiers"* that specifies unique identifiers for supply chain management, such as transport units, (known as the License Plate number), serialised items, lot/batch numbers, returnable transport items or groupings of transport units.

1.2 Scope

This guideline describes the structure and application for the unique identification of the following entities:

– Companies
– Organisational (sub-)units of companies
– Locations (defined by companies)
– Products
– Returnable transport items
– Serial numbers
– Traceability (i.e. batch / lot) numbers
– Groupings of Transport Units

Transport Units themselves are not addressed in this guideline. For details refer to the EDIFICE License Plate Guideline Issue 6.

Unique Identification of Packaging is being addressed by ISO/IEC JTC1/SC31 WG2 and ISO TC122. This guideline will be updated accordingly as soon as these committees have published their recommendations.

The definition of the hierarchical structure of unique identifiers is not addressed in this guideline.

Because many of these data elements are shown on labels and are encoded in a 1D symbol or any kind of high capacity media (e.g. 2D symbol, RFID Tag), appropriate data identifiers have been defined.

1.3 Benefits

In business practice a lot of different numbering schemes are frequently in use for identification of suppliers, customers, articles, locations, serial- and traceability numbers.

Assignments of such numbers are made by suppliers as well as the different customers in the supply chain or even by carriers. This requires a huge duplicate, parallel administration effort of several identification numbers for the same entity without added value.
In fact there are organisations that provide worldwide unique identification schemes for entities which are mostly specialised for specific industries or purposes (GS1/EPC, DUNS numbers, CLEI, IATA, ODETTE, etc...).

Thus there is a need for a flexible identification system which is applicable and practical for all potential trading partners world wide.
The prefix structure of ISO/IEC 15459 provides the appropriate basis.

Some benefits and advantages of this identification system are:

– world wide unique identification
– each entity identifier is assigned by the originator (e.g. supplier, manufacturer, etc…) which allows flexibility in the specification of the identifiers
– this unique identification can be used by all partners in the supply chain.
– companies can continue to use their existing internal, legacy numbering system
– the use of alphanumeric characters allows for a higher capacity with given characters
– applicable for all industrial sectors with the respective governing organisations being the Issuing Agency
– world wide rules but decentralised control
– IACs (Issuing Agency Codes) and CINs(Company Identification Numbers) are available on the internet –
  Since 2016, the maintenance of the ISO/IEC 15459 standard is with AIM Global. Find here the List of Issuing Agency Codes.

The enablement costs of this unique identification system are very low. EDIFICE provides one CIN free of charge to all its member companies. Non-Members are charged a one-time administrative fee.
The complete list of assigned EDIFICE CINs is available on www.edifice.org
Based on this information, users are able to identify the source of the coded information.

2 Definitions

COMPANY
A company is a 'party to a transaction', meaning a trading partner in a B2B relationship.

ORGANISATIONAL (SUB-)UNIT
An organisational (sub-)unit may be a legal entity (i.e. a subsidiary), a division, a department or any other organisational unit uniquely identified and defined within a company.

LOCATION
A location may be any physical facility such as a manufacturing plant, branch office building or even a single room or loading dock, that is uniquely identified and defined within a company.

PRODUCT
First level or higher assemblies that are sold in a complete end-usable configuration. May be a single part, component, assembly or any other finished good, regardless of its value and stage in the supply chain.
A product identification is a unique code assigned to a product by its manufacturer.

SERIAL NUMBER
A serial number is a unique code assigned to a particular instance of a product by its manufacturer for traceability purposes. A serial number is a special instance of traceability number.

TRACEABILITY NUMBER
For use in this guide a traceability number is a unique code identifying a lot number, a batch number or another number under which a group of entities/products is traceable in the manufacturer's computer system. The traceability number is assigned by the manufacturer and provides a basis for 'internal traceability', i.e. it establishes a connection to details that are collected and recorded within the manufacturing process.

RETURNABLE TRANSPORT ITEM (RTI)
A returnable transport item (RTI) may be any type of reusable packaging such as a pallet, skid, box or crate which may be used to protect and facilitate handling of products. RTIs are designed and built so they can be reused several times for transport purposes.
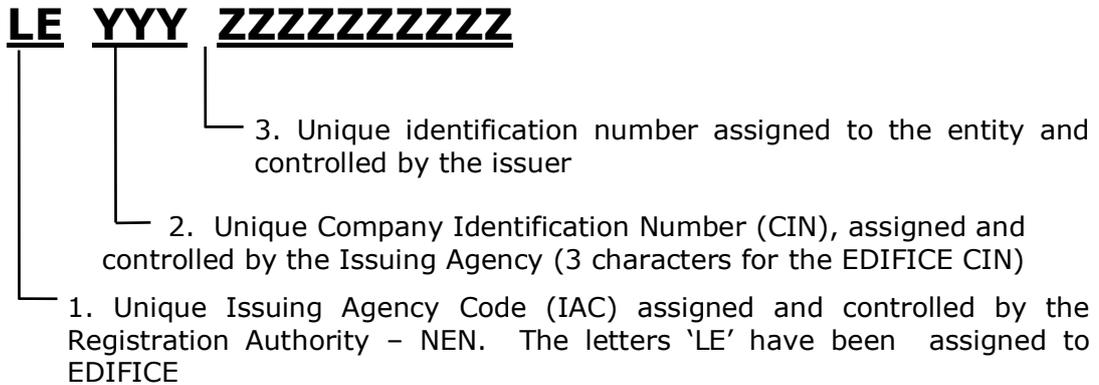
GROUPING OF TRANSPORT UNITS
In supply chain management and logistics, a (logical) grouping of transport units is used to facilitate and ensure that all entities of the grouping are handled, shipped and delivered together to the destination. Each (logical) group is assigned an identification, which is commonly known as Bill of Lading, Waybill, CMR or simply shipment identification number.

3 Data Element Structure

This section defines the general structure of the unique identification and the different data elements that it is applied to.

It consists of 3 segments :

LE YYY ZZZZZZZZZ

3. Unique identification number assigned to the entity and controlled by the issuer

2. Unique Company Identification Number (CIN), assigned and controlled by the Issuing Agency (3 characters for the EDIFICE CIN)

1. Unique Issuing Agency Code (IAC) assigned and controlled by the Registration Authority – NEN. The letters 'LE' have been assigned to EDIFICE

Note: The spaces between the segments have been added for clarity

1. The first segment is the Issuing Agency Code (IAC). The IAC is a unique code assigned and controlled by the NEN (Nederlands Normalisatie Instituut) in accordance with ISO/IEC 15459.
   The IAC is a 1 to 3 alphanumeric character code. The list of NEN assigned IACs can be found on the NEN web site (see annex 2 of this document).

2. The second segment is a unique Company Identification Number (CIN) assigned to a company by the Issuing Agency (IA).
   Each company implementing this unique numbering system, will register at the IA of its preference and will be assigned one or more CINs depending on the IA's rules and company's requirements.
   Each IA has established own rules for the assignment and format of their CINs.
   For the EDIFICE rules see section 6.2.

3. The third segment contains the company's respective, internal identification number assigned to the entity. This may be the proprietary, legacy number and is controlled by the company itself.
   Note: For the GUIC (Global Unique Identification of a Company) code this 3rd segment is not applicable.

IMPORTANT: There shall only be a single Unique Identifier per data element construct as defined in the sub-sections below assigned to an entity.

3.1   Global Unique Identification of a Company - GUIC

The GUIC uniquely identifies a company. A company is a 'party to a transaction', meaning a trading partner in a B2B relationship.

The GUIC consist of 2 segments, namely the IAC and the CIN.
As the IAC is a unique code assigned by the NEN, and the CIN is a unique code assigned by the IA, the combination of both codes forms an identifier that is globally unique.

3.2   Global Unique Identification of an Organisational (sub) Unit - GUIO

The GUIO uniquely identifies organisational sub-units of a company. A sub-unit may be a legal entity (i.e. subsidiary), a division, a department or any other organisational unit defined within a company.

This data element is comprised of the GUIC as described in section 3.1 followed by the company's internal code assigned to identify the sub-unit.

3.3   Global Unique Identification of a Location – GUIL

The GUIL uniquely identifies physical locations of a company. A location may be any physical facility such as a manufacturing plant, branch office, building or even a single room or dock, that is uniquely defined within a company.

This data element is comprised of the GUIC as described in section 3.1 followed by the company's internal code assigned to identify the physical location.

3.4   Global Unique Identification of a Product – GUIP

The GUIP uniquely identifies a company's product. A product for this definition may be a single part, component, assembly or any other finished good, regardless of its value and stage in the supply chain.

This data element is comprised of the GUIC as described in section 3.1 followed by the company's internal code assigned to identify the product

3.5   Global Unique Identification of a Serial Number – GUIS

The GUIS uniquely identifies the serial number of a serialised product.

This data element is comprised of the manufacturer's GUIC as described in section 3.1 followed by the serial number assigned to the product by the manufacturer.

3.6   Global Unique Identification of a Traceability Number – GUIT

The GUIT uniquely identifies the internal traceability number for a product. This data element is comprised of the manufacturer's GUIC as described in section 3.1 followed by the unique traceability number assigned by the manufacturer.

The traceability number can be a lot number, a batch number or another number, under which a group of entities / products is traceable in the manufacturer's computer system.

3.7   Global Unique Identification of Returnable Transport Items – GUIR

The GUIR uniquely identifies a returnable transport item (RTI) such as a skid, box pallet, wooden crate, or the like (see definition in section 2).

This data element is comprised of the manufacturer's GUIC as described in section 3.1 followed by a serial number uniquely assigned to the RTI by the manufacturer.
Part of this identifier may also indicate the type of packaging and additional information.

3.8 Global Unique Identification of Groupings of Transport Units – GUIG

The GUIG uniquely identifies a logical grouping of transport units (GUIG), i.e. a physical shipment by a unique Bill of Lading number, Waybill number or other shipment number assigned to the grouping by either the shipper/consignor or by the transporter/carrier.

This data element is comprised of the GUIC as described in section 3.1 followed by the company's internal code assigned to the grouping of transport units.

Note: please pay special attention to the applicable data identifier that determines the issuing party, i.e. the carrier or the shipper.

4 Machine readable representation

4.1 Structure

This is the general structure when a unique identifier is encoded in a machine readable symbol

(XXX) LE YYY ZZZZZZZZZ

Data Identifier used with 1D barcode or 2D symbology as defined by ANS MH10.8.2

With 'High Capacity ADC Media' (e.g. 2D codes), ISO/IEC 15434 defines a certain structure into which data elements are embedded. This structure consists of a Message Header and Message Trailer, and one or more Format Headers and Format Trailers. ISO/IEC 15434 also defines the syntax that is used for these. The following figure shows the general structure. The example below contains 2 different formats.
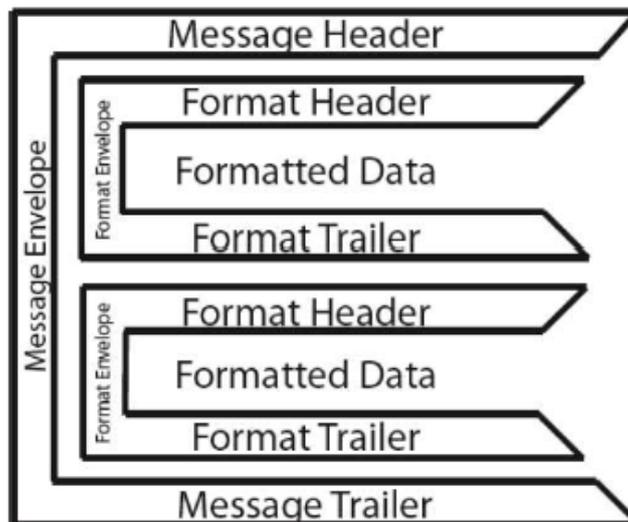
The following table shows the values and definitions of the different segments that shall be used:

Segment	Segment Value	Explanation
Message Header	[)>$^R{}_S$	$^R{}_S$ is a non-printable character as per the ISO 646 character table (HEX 1E)
Format Header	06$^G{}_S$	'06' indicates that the encoded data elements are using ANS MH10.8.2 Data Identifiers
Data Element Separator	$^G{}_S$	Non-printable character as per the ISO 646 character table (HEX 1D)
Format Trailer	$^R{}_S$	Non-printable character as per the ISO 646 character table (HEX 1E)
Message Trailer	$^E{}_{O_T}$	Non-printable character as per the ISO 646 character table (HEX 04)

As an example, the string of characters encoding a unique product number and its unique serial number would be encoded like follows:

[)>$^R{}_S$ 06$^G{}_S$ 25Pxxxxxxxx $^G{}_S$ 25Syyyyyyyyyyy $^R{}_S$ $^E{}_{O_T}$

where 25P and 25S are Data Identifiers and xxxxxxxx represents the unique product number and yyyyyyyyyyy represents the unique serial number.

Note: spaces between the segments are only included for illustration purposes and shall be omitted when encoding the data in the ADC media.

4.2   Data Identifiers

The ISO/IEC 15459 standard requires that data encoded in a barcode or 2D symbol must be preceded by data identifiers that conform to ISO/IEC 15418 (see References).
ISO/IEC 15418 refers to ANS MH 10.8.2, which provides the detailed definitions of Data Identifiers.

A Data Identifier is a specified character, or string of characters, that denotes the intended use of the data that follows.

The data identifier immediately precedes the data in the machine readable symbol. The data identifier can be a single alphabetic character, or one to three numeric digits followed by a single alphabetic character.

In other words, the first alphabetic character of the scanned data element is always the last – or only – character of the data identifier.

The following table shows the data identifiers to be used in a 1D (barcode) or 2D symbol:

ANS MH10.8.2. Data Identifier	Data Element	
18V	GUIC	Global Unique Identification of a Company
21V	GUIO	Global Unique Identification of an Organizational (Sub-)Unit
25L	GUIL	Global Unique Identification of a Location
25P	GUIP	Global Unique Identification of a Product
25S	GUIS	Global Unique Identification of a Serial Number
25T	GUIT	Global Unique Identification of a Traceability Number
25B	GUIR	Global Unique Identification of a Returnable Transport Item
25K	GUIG	Global Unique Identification of Groupings of Transport Units assigned by the carrier
26K	GUIG	Global Unique Identification of Groupings of Transport Units assigned by the shipper

4.3   Format

Any GUIx number shall contain only numeric and/or upper case alphabetic characters. No lower case characters or punctuation marks shall be used. It shall not contain more than 35 characters, excluding the Data Identifier. This is in coordination with the EDIFACT rules.

The following table shows the format of the different data elements following EDIFICE recommendation:

Data Element	GUIx			
	Data Identifier	IAC	CIN *)	Global Unique Identification Number assigned by the company*)
GUIC	18V	LE	an 3	-
GUIO	21V	LE	an 3	an…15
GUIL	25L	LE	an 3	an…15
GUIP	25P	LE	an 3	an…20
GUIS	25S	LE	an 3	an…20
GUIT	25T	LE	an 3	an…20
GUIR	25B	LE	an 3	an…20
GUIG	25K	LE	an 3	an…20
GUIG	26K	LE	an 3	an…20

*) *in these columns, 'an' denotes alphanumeric data, followed by a character count. This is either a fixed value (as e.g. the CIN), or variable up to the indicated limit. This defined limit takes into account technical restrictions of barcode reading equipment.*

The length limitations are illustrated in the examples below. The same GUIP is coded in 1D barcode symbols Code 39 and Code 128.

Code 39

Parameters: Ratio   =   3:1   X-dimension   =   0,20

GUIP: 25PLEXYZPRODUCT1234567890123

Code 128

Parameters: X-dimension   =   0,20

GUIP: 25PLEXYZPRODUCT1234567890123

4.4   RFID - Radio Frequency Identification

A unique identifier of an entity may also be encoded in a RFID tag. To be consistent with the methodology of the identification scheme and structure that is used with optically readable media like 1D (= Bar Code) or 2D (= 2-dimensional) Symbols, the instance of the unique identifier shall be encoded in the UII section of the RF tag using the data identifier as defined in section 4.2 and the appropriate AFI (Application Family Identifier).

The figure below shows how the UII is embedded within the RFID Tag memory.
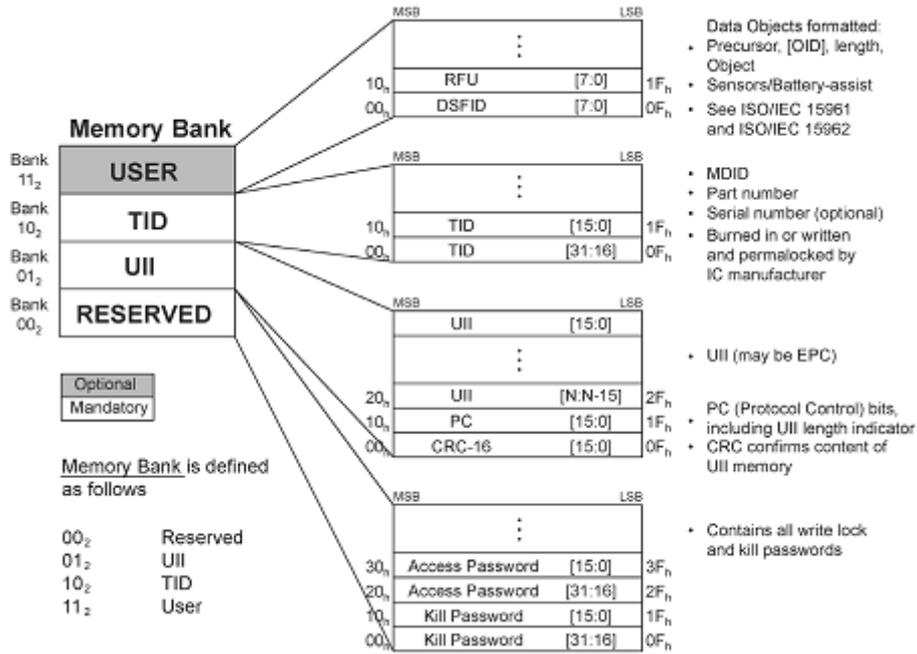
Tag data structure according to ISO/IEC 18000 – 6C / 18000 - 3 Mode 3

For more details on the encoding of unique identifiers in RF tag please see the EDIFICE Radio Frequency Identification (RFID) Guideline.

5 Examples

5.1 Use of GUIx in EDIFACT messages

```
UNH+1+ORDERS:D:97A:UN:EDPO04'
BGM+220+PO11223+9'
DTM+137:931014:101'
RFF+CT:9999'

NAD+BY+UN123456789::16'                    GUIC: UN123456789 is the Buyers ID
                                           (Issuing Agency = Dun & Bradstreet)

RFF+VA:12121'
CTA+PD+:RICHARD JOHNSON'
COM+327369:TE'

NAD+SE+LEMFT::8'                           GUIC: LEMFT is the Sellers ID (Issuing Agency =
EDIFICE)

NAD+DP+LEDEL::8'                           GUIC: LEDEL is the Delivery Party ID
                                           (Issuing Agency = EDIFICE)

CUX+2:USD:9'

LIN+1++LEMFTPRODABC:MF::90'                GUIP:  number assigned by the Manufacturer 'LEMFT'

QTY+21:3000:PCE'
PRI+AAA:5.50:CT::1:PCE'
RFF+LI::37'
SCC+1'
QTY+21:2000'
DTM+2:940204:101'
SCC+1'
QTY+21:1000'
DTM+2:940304:101'
UNS+S'
UNT+24+1'
```

5.2 Use of GUIx in XML

RosettaNet Partner Interface Process™ extracts of PIP® 3A4 Purchase Order version 1.0

GlobalBusinessIdentifier – GUIC

```
<toRole>
<PartnerRoleDescription>
<GlobalPartnerRoleClassificationCode>Seller</GlobalPartnerRoleClassificationCode>
<PartnerDescription>
<GlobalPartnerClassificationCode>Manufacturer</GlobalPartnerClassificationCode>
<BusinessDescription>   <GlobalBusinessIdentifier>LEMFT</GlobalBusinessIdentifier>
<GlobalSupplyChainCode>Electronic Components</GlobalSupplyChainCode>
</BusinessDescription>
</PartnerDescription>
</PartnerRoleDescription>
</toRole>
```

LE: Issuing Agency Code for EDIFICE
MFT : Company identification number for : Manufacturer of EC devices

GlobalLocationIdentifier – GUIL

```
<shipFrom>
<GlobalLocationIdentifier>LEMFTPLANT1</GlobalLocationIdentifier>
</shipFrom>
```

LE: Issuing Agency Code for EDIFICE
MFT : Company identification number for : Manufacturer of EC devices
PLANT1 : Manufacturer of EC devices – Plant 1 – assigned by company MFT

GlobalProductIdentifier – GUIP

```
<ProductDescription>
<GlobalProductIdentifier>LEMFTPRODABC</GlobalProductIdentifier>
</ProductDescription>
```

LE: Issuing Agency Code for EDIFICE
MFT : Company identification number for : Manufacturer of EC devices
PRODABC: Unique product identification number assigned by company MFT

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5.3 Use in 1D or 2D symbols on labels

Transport Label *⁾

Ship from	Ship to
BCL **Best Components Ltd** **90 Megaherz Lane** **Chiptown SN3 1RJ**	**Fine Computers Limited** **521 Megabyte Drive** **Graphtown 7R3BY1** **UK**
Weight/Volume **17** kg	

(K) Order Number: G90K7-M-C501-292027

(Q) Quantity: 250

(25P) Part Number: LEMFTPRODABC

SPLR / CUST

(J) LEMFT12345678904
(K) G90K7-M-C501-292027
(Q) 250
(7Q) 17kg
(25P) LEMFTPRODABC
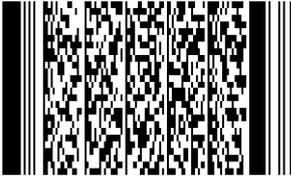
Symbol: PDF 417
Data encoded according ISO/IEC15434c

(J) License plate: LEMFT12345678904

*⁾ Note: the Content of the 2D symbol used in this example may not be authentic.

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Product Package Label

(25P) Supplier Part No.: **LEMFTPRODABC** * 25PLEMFTPRODABC* **(25L)** Supplier Div.: **LEMFTPLANT1** * 25TLEMFTLOT123* **(25T)** Lot No.: **LEMFTLOT123** * 25TLEMFTLOT123* **(2P)** EC Level.: **C5K** * 2PC5K* **(Q)** Quantity: **250** * Q250*	**Fixed Metal Glaze Chip Resistor** National Semiconductor I - Plant 1 - Date: 2010-05-25 **(4L)** Origin.: **DK** * 4LDK* Made in Denmark

6 How to request a Company Identification Number (CIN)

A company requesting one or more CINs, should consult the Issuing Agency (IA) list on the web site of the NEN and get in touch with the IA of its preference.

The following chapters describe the request procedure at EDIFICE.

6.1 Issuing Agency EDIFICE – assignment of CIN

– Companies can apply for as many CINs as they wish, for example to identify legal entities in different countries. Whenever possible consecutive CINs will be allocated to the same company. See Annex 1 for the EDIFICE CIN request form.

– Although primarily intended for the Electronics Industry and its partners, CINs can also be assigned to companies from other industries. EDIFICE however reserves the right to refuse the request for a CIN.

– EDIFICE members receive the first CIN free of charge.

– Verification procedure: once a year EDIFICE takes the initiative to verify the stored information.

6.2 Structure of the CIN assigned by EDIFICE

The Company Identification Numbers assigned by EDIFICE are guaranteed to be unique.

To guarantee uniqueness, CINs issued by EDIFICE conform to the following rules:

- a CIN consists of 3 alphanumeric characters
- renounced CINs will not be re-assigned for a period of 5 years

6.3 Publication

A register of all companies who applied for an EDIFICE Company Identification Number (CIN) can be viewed on the EDIFICE Web Site :

http://www.edifice.org

6.4 Annex 1 - EDIFICE CIN Request Form

Register on-line at: http://www.edifice.org/license-plate-CIN-Req.htm

REQUEST FORM for an EDIFICE COMPANY IDENTIFICATION NUMBER

Company/Subsidiary for which the CIN is being requested

COMPANY :   --

Main Business area : --

DEPARTMENT: --

ADDRESS: --

CITY & ZIP: --

COUNTRY :   --

PROPOSED CIN (3 character alpha-numeric) :   ☐ ☐ ☐

EDIFICE holds the right to change the proposed CIN depending on availability.

Do you agree to publish your company's CIN on the Public EDIFICE Web Site? YES/NO

Contact Person :

NAME: ---   FIRST NAME:------------------------

FUNCTION: ---

PHONE: ----------------------------------   FAX: ----------------------------------
------

E-MAIL: ---
--

Bill-To Address

COMPANY: ---

DEPT: ---

ADDRESS: ---

CITY & ZIP: ---

COUNTRY: ---

VAT: --

A company Identification Number (CIN) will be assigned to you within 3 working days after receipt of your payment. EDIFICE member companies receive the first CIN free of charge.

Date   ………………………………….Signature --
Please return this form to : EDIFICE secretariat; Dora.Cresens@edifice.org

6.5 Annex 2 – Register of Issuing Agency Codes for ISO/IEC 15459

Since 2016, the maintenance of the ISO/IEC 15459 standard is with AIM Global. Find here the List of Issuing Agency Codes.