
**Information technology — Automatic
identification and data capture
techniques — Unique identification —**

**Part 4:
Individual products and product
packages**

*Technologies de l'information — Identification automatique et
techniques de capture de données — Identification unique —*

Partie 4: Articles individuels et paquetages d'article

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*; Subcommittee SC 31, *Automatic identification and data capture techniques*.

This third edition cancels and replaces the second edition (ISO/IEC 15459-4:2008), which has been technically revised.

This corrected version of ISO/IEC 15459-4:2014 incorporates the following correction plus other minor editorial modifications. Clause 5.3 has been modified as follows:

“5.3 Permissible character sets in an identity

The identity shall use alphabetic, numeric and special characters from the invariant character set ISO/IEC 646, see Annex A in ISO/IEC 15459-3.

More compact data encoding may be attained by using only upper case alphabetic characters and numeric digits.

An Issuing Agency may have additional requirements on the repertoire of characters found within identities using its IAC.

Any data processing system shall be capable of processing identities using the full repertoire of characters permitted by ISO/IEC 646.”

A list of all parts in the ISO/IEC 15459 series can be found on the ISO website.

Introduction

Unique identities can occur at many different levels, at item level, on the transport unit, on the returnable transport item, at grouping levels, and elsewhere. Such entities are often handled by several parties, both public and private, throughout their lifecycle. Each of these parties must be able to identify and trace such distinct entities so that reference can be made to associated information such as quality inspection data, the chemical substance contained, the batch or lot number of parts, components or raw materials, etc.

The associated information is typically held in some kind of database. The information can be accessed using EDI exchange or another appropriate access protocol, e.g. a directory access protocol.

There are considerable benefits if the identity of the entity is represented as a bar code or other AIDC (Automatic Identification and Data Capture) media and attached to or made a constituent part of that which is being uniquely identified so that

- it can be read electronically, thus minimizing errors;
- one identity can be used by all parties;
- each party can use the identity to look up its computer files to find the data associated with the entity.

All AIDC technologies have the potential to encode an identity. It is expected that application standards, using various automatic identification technologies, will be developed based upon the identity as a prime key. These application standards, which can include additional rules for which level of identification should be used, are often made available from the Issuing Agency.

The identity for products and product packages defined in this part of ISO/IEC 15459, and represented in AIDC media attached to the product or product package, meets the needs defined in ISO/IEC 15459-3, Common Rules.

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Information technology — Automatic identification and data capture techniques — Unique identification —

Part 4: Individual products and product packages

1 Scope

This part of ISO/IEC 15459 specifies a unique string of characters for the identification of individual products and product packages. The character string is intended to be represented in a linear bar code symbol or two-dimensional symbol or other AIDC media attached to the entity to meet management needs. To address management needs different classes of identities are recognized in the various parts of ISO/IEC 15459, which allows different requirements to be met by the identities associated with each class.

The rules for the identification of an individual occurrence of a product or product package, understood to mean the layers zero and one defined in the International Standards ISO 17367 and ISO 17366, respectively, are defined and supported by examples.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 646, *Information technology — ISO 7-bit coded character set for information interchange*

ISO 3779, *Road vehicles — Vehicle identification number (VIN) — Content and structure*

ISO/IEC 15459-2, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 2: Registration procedures*

ISO/IEC 15459-3, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 3: Common rules*

ISO/IEC 19762-1, *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary — Part 1: General terms relating to AIDC*

GS1 General Specifications

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 19762-1 and ISO/IEC 15459-3 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at <http://www.electropedia.org/>

— ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Identities for individual products and product packages

Each individual product or product package (See Annex A) shall be unambiguously identified by a qualifier and a string as defined in [Clause 5](#) so that individual products or product packages of a given type can be distinguished from other types. The permitted combinations of qualifier and string are determined by the Issuing Agency.

If there is only one individual product in a product package, or one individual product is seen as dominant in the product package, the product package may use the identity as the included sole or dominant individual product (see [Clause 4.1](#)). In other cases a product package shall have its own identity, making it possible to differentiate the product package from the included individual products.

Notwithstanding the above, where regulatory requirements or industry practice dictate it may be necessary to assign an identity to the only or all the individual products in a package.

4.1 Qualifiers for individual products and product packages

The qualifier component of an identity for a product or product package may use any data format supported by ISO/IEC 15434 or ISO/IEC 9834-1. What formats may be used are to be specified by the Issuing Agency rules. For the purpose of this standard examples are not meant to be exhaustive, but rather representative of the full suite of data qualifiers possible to use and relevant to this standard;

4.1.1 Identity using a serial component

— GS1 Application Identifiers **8004**

If this method is used to create the identity each unique identity issuer would select the appropriate GS1 Application Identifier, conforming to the requirements of the GS1 General Specification, to act as the qualifier of the identity.

— ASC MH 10 Data Identifiers **25S** or **3I**

If this method is used to create the identity each unique identity issuer would select the appropriate ASC MH10 Data Identifier as required by the appropriate Issuing Agency to act as the qualifier of the identity.

NOTE The structure of an identity following “3I” is defined in ISO 3779, *Road vehicles — Vehicle identification number (VIN) — Content and structure*. “3I” is mentioned here to avoid multiple individual unique identities being marked on or attached to a product.

— When employing an ISO/IEC compliant high capacity AIDC data carrier an additional option is the object identifiers:

- | | |
|----------------|---|
| 1 0 15459 4 7: | for a product package identifier for item management defined by the IAC. This is independent of, and unlike the structures below, does not support mapping to GS1 Application Identifiers and ASC MH 10 Data Identifiers. |
| 1 0 15459 4: | for a product identifier for item management defined by the IAC. This is independent of, and unlike the structures below, does not support mapping to GS1 Application Identifiers and ASC MH 10 Data Identifiers. |
| 1 0 15459 4 2: | for a product identifier for item management equivalent to GS1 Application Identifier 8004 |
| 1 0 15459 4 4: | for a product identifier for item management equivalent to ASC MH10 Data Identifier 25S or 3I |

4.1.2 Identity using a separate serial component

— GS1 Application Identifiers combination **01** 'plus' **21**

If this method is used to create the identity each unique identity issuer would select the appropriate GS1 Application Identifier, conforming to the requirements of the GS1 General Specification, to act as the qualifier of the identity.

— ASC MH 10 Data Identifiers combination **25P** 'plus' **S**

If this method is used to create the identity each unique identity issuer would select the appropriate ASC MH10 Data Identifier as required by the appropriate Issuing Agency to act as the qualifier of the identity.

— When employing an ISO/IEC compliant AIDC data carrier an additional option is the object identifiers:

1 0 15459 4 3:	for a product identifier for item management equivalent to a Serialised GTIN (GS1 Application Identifiers 01 'plus' 21)
1 0 15459 4 6:	for a product identifier for item management equivalent to a serialised product (ASC MH 10 Data Identifiers 25P 'plus' S)

5 Identity for individual products and product packages

5.1 General

An identity is assigned to an individual product or product package by an identity issuer. This shall be done in accordance with the rules established by an authorized Issuing Agency as identified in ISO/IEC 15459-3 and ISO/IEC 15459-2.

5.2 Maximum number of characters permissible in an identity

The identity for individual products and product packages shall not contain more than 50 characters.

For efficient use within various AIDC data carrier systems, it is recommended that the number of characters to be coded by one-line linear bar code should not exceed 20 characters, and number of characters should be kept as short as possible regardless of the permissible maximum of 50 characters.

5.3 Permissible character sets in an identity

The identity shall use alphabetic, numeric and special characters from the invariant character set ISO/IEC 646, see Annex A in ISO/IEC 15459-3.

More compact data encoding may be attained by using only upper case alphabetic characters and numeric digits.

An Issuing Agency may have additional requirements on the repertoire of characters found within identities using its IAC.

Any data processing system shall be capable of processing identities using the full repertoire of characters permitted by ISO/IEC 646.

6 Implementation of coding using AIDC media

All AIDC technologies have the potential to encode an identity. It is expected that application standards for entities, using various automatic identification technologies, will be developed based upon the ISO/IEC 15459 identity as a prime key. These application standards may be made available from the Issuing Agency.

Annex A (normative)

What is a product and/or product package?

A.1 Product or product package

It is not possible to give a precise definition of what that is to be seen as a product or product package, which also could be of a primary or secondary package, as it is based on the view of the manufacturer, seller or user.

Figure A.1 wants to highlight this matter and provide a base for the issuer of an identity to as accurately as possible assign the most proper identification to an entity (product or product package).

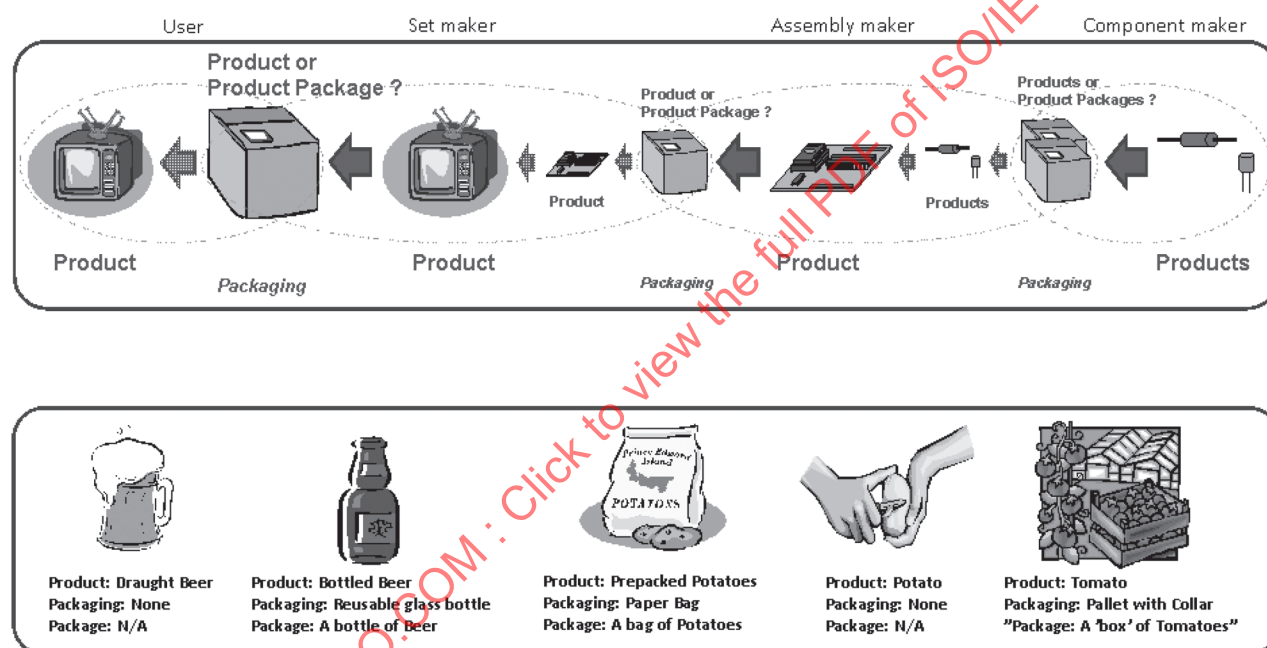


Figure A.1 — Product, packaging and package in different scenarios

Annex B (informative)

Unique identification for product and product package management

NOTE The examples shown in this informative annex are illustrative of those permitted. The examples for both data and AIDC carriers used are not exhaustive.

B.1 Role of the Issuing Agency in providing application guidance for product and product package management

In addition to the requirements of an Issuing Agency outlined elsewhere in ISO/IEC 15459-2, each Issuing Agency is expected to provide guidelines if product and product package management are relevant to its IAC domain.

B.2 Product and product package identification management

To illustrate the usage of an individual identity, the hypothetical example is given using the two Issuing Agencies (IAs) recognized by the Registration Authority, GS1 and NATO Allied Committee 135.

The construction of the identity minimally includes the Issuing Agency Code (IAC), Company Identification Number (CIN), and string component (ID) assuming that the ID is unambiguous within the CIN. In some cases IDs are not unambiguous within the CIN but are unambiguous within a specific asset type under the control of a company. If the ID is not unambiguous within the company, the identity must include a company asset type code, or similar. Thus the identity established by the identity issuer cannot be the same as that established by another. Moreover, ISO/IEC 15459-2 ensures all the identities are unambiguous.

B.2.1 GS1 unique identification using a serial component

The rules of GS1, to whom the Issuing Agency Codes “0” till “9” have been allocated by the Registration Authority, are that identities consists of no more than 30 alphanumeric characters, the first part of which is always numeric. The first numeric string of characters is allocated by GS1 to the issuer (Global Company Prefix) and the following characters are assigned by issuer under the rules of GS1.

EXAMPLE 1 Identity issued under the rules of GS1. In this example the Application Identifier is “8004”, the IAC is “1”, the CIN is “1098756”, and the identity issuer assigned code is “100110780”.

[Figure B.1](#) below shows a GS1 string (to be preceded by Application Identifier “8004”).

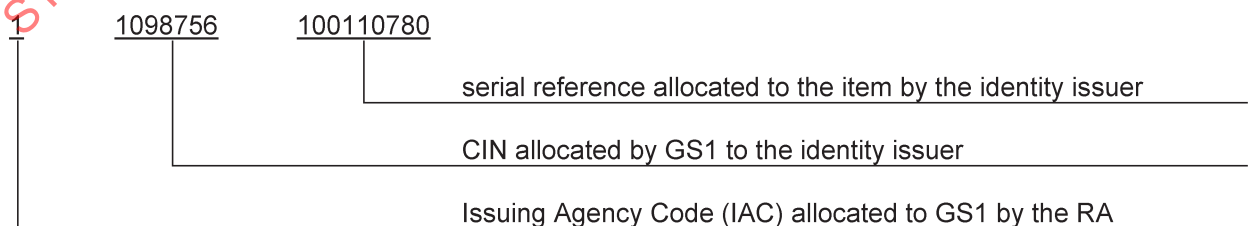


Figure B.1 — GS1 string for individual asset

This string can be contained in a GS1-128 bar code, or other AIDC media, using the GS1 Application Identifier “8004”.

The bar code symbol when scanned can be expected to pass the following data string to the computer system:

Table B.1 — Data stream — GS1

Symbology identifier	Identity	
	Qualifier	String
JC1	8004	1098756100110780

NOTE The Application Identifier “8004” is not included in the string, but included in the identity. The symbology identifier is not included in the bar code but is provided by the reader identifying the data carrier used. In the example above, the data carrier is a GS1-128 bar code.

B.2.2 GS1 unique identification using a separate serial component

Figure B.2 below shows a GS1 string to be used with the combination of Application Identifier “01” and “21”.

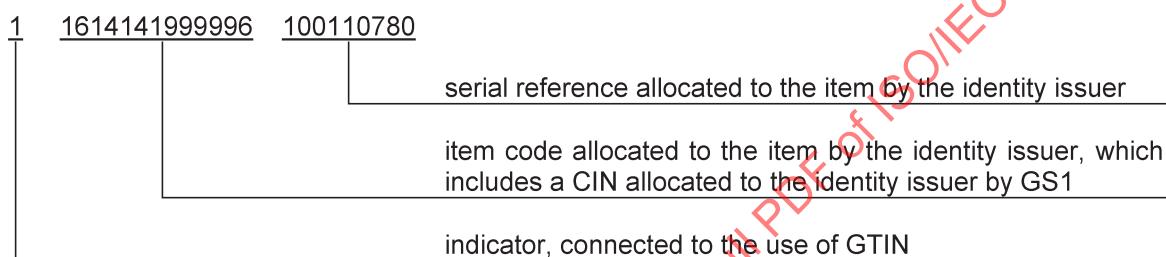


Figure B.2 — GS1 string for individual product package using serial component

This string can be contained in a GS1-128 bar code, or other AIDC media, using the GS1 Application Identifiers “01” and “21”.

The bar code symbol when scanned can be expected to pass the following data string to the computer system:

Table B.2 — Data stream — GS1

Symbology identifier	Identity			
	Qualifier	String	Qualifier	String
JC1	01	11614141999996	21	100110780

NOTE The Application Identifiers “01” and “21” are not included in the string, but included in the identity. The symbology identifier is not included in the bar code but, but is provided by the reader identifying the data carrier used. In the example above, the data carrier is a GS1-128 bar code.

B.2.3 NATO Allied Committee 135 unique identification

NATO Allied Committee 135, to whom the Issuing Agency Code “D” has been allocated by the Registration Authority, has issued rules for the creating identities. The characters following the Issuing Agency Code “D” are allocated by NATO Allied Committee 135 to commercial or government entities and are referred to as a CAGE/NCAGE codes. The identity issuer then assigns the remaining characters. See Figure B.2.

EXAMPLE 2 Typical identification issued under the rules of “military organization NATO ALLIED COMMITTEE 135”: In this example the Data Identifier is “25S”, the IAC is “D”, the CIN (CAGE/NCAGE) is “1U2R7”, and the serial number is “100110780”.

Figure B.3 below shows an NATO Allied Committee 135 item identity (Data Identifier 25S).