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

Part 6: Groupings

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

Partie 6: Regroupements

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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 second edition cancels and replaces the first edition (ISO/IEC 15459-6:2007), which has been technically revised.

This corrected version of ISO/IEC 15459-6:2014 incorporates the following correction plus other minor editorial modifications. Clause 6.3 has been modified as follows:

"6.3 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 groupings of products, product packages, transport units and items defined in this part of ISO/IEC 15459, and represented in AIDC media attached to the entities (e.g. raw material, parts, transport units, finished goods, consumer products, assets, etc.), meets the needs defined in ISO/IEC 15459-3, Common Rules.

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

Part 6: Groupings

1 Scope

This part of ISO/IEC 15459 specifies a unique string of characters for the identification of groupings of products, product packages, transport units and items. The character string is intended to be represented in a linear bar code symbol and two-dimensional symbol or other AIDC media attached to the entity to meet management needs and/or regulatory needs (e.g. customs clearance). To address these needs different types of identifiers are recognized in the various parts of ISO/IEC 15459, which allows different requirements to be met by the unique identifiers associated within the context of the specific parts of ISO/IEC 15459.

The unique identifiers for grouping or products, product packages, transport units and items enables grouping by e.g. type, characteristics, order, manufacturing, quality, location, movement, etc. to be uniquely identified. It is possible to use with other unique individual identifiers defined in other parts of ISO/IEC 15459. Encoding these unique identifiers in a data carrier enables information about the item processing to be clearly identified.

The identity for groupings is intended for "look-up" purposes, and cannot be directly used as an entity identity in the strictest sense of the definitions as used, for example, in ISO/IEC 15459-1, ISO/IEC 15459-4, and ISO/IEC 15459-5.

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/IEC 15459-1, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 1: Individual transport units*

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 15459-4, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 4: Individual products and product packages*

ISO/IEC 15459-5, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 5: Individual returnable transport items (RTIs)*

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 entities

An individual instance of an entity is aptly identified by an identity that is different from any other identity. The description of such a form of unique identification is described in ISO/IEC 15459-1, ISO/IEC 15459-4 and ISO/IEC 15459-5. The provisions in ISO/IEC 15459-1, ISO/IEC 15459-4 or ISO/IEC 15459-5 shall be used for individual entities.

Where unique identification for grouping of entities, which are not necessarily of the same type, is required the provisions of Clause 5 and Clause 6 of this part of ISO/IEC 15459 shall be used.

5 Identities for grouping of entities

The grouping of entities for which the type, usage, quality, or delivery, etc. is considered the same could be determined to be uniquely and distinctly identified and such a grouping should be unambiguously identified by a qualifier and string as defined in Clause 6 so that groupings can be distinguished from entities using other qualifiers.

The qualifier component of an identity for a grouping may use any data format supported by ISO/IEC 15434 or ISO/IEC 9834-1. What formats to 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;

— GS1 Application Identifiers **01** or **402**

  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 **25P**, **25T**, **25K** or **26K**

  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 There are situations where the identity be constructed from various factors, such as the manufacturing date, materials, production facilities, operator, environmental conditions, and many kinds of parameters at the manufacturing process is required to specify the quality of an entity, dependent on the characteristics of the entity. In such a case, these factors should be reflected elsewhere in an AIDC domain; not as part of an identity but as an attribute to the identity according to this part or any other part of ISO/IEC 15459.

6 Identity for grouping of products, units and items

6.1 General

An identity is assigned to an entity (e.g. product and/or material) to enable follow up by a unique 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.

6.2 Maximum number of characters permissible in a unique identity

The identity for groupings 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 a one line linear bar code symbol should not exceed 20 characters, and the number of characters should be kept as short as possible regardless of the permissible maximum of 50 characters.

6.3 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.

7 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
(informative)

Groupings

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

A.1 Different ways of grouping entities

Grouping of entities can, for example, be achieved by a focus on:

— Grouping by batch, e.g. focus on quality, using batch numbers (with AI "10" or DI "25T")

— Grouping by type, e.g. same characteristics, using product numbers (with AI "01" or DI "25P")

— Grouping of transport units, e.g. same delivery, using shipment number (with AI "402" or DIs "25K" or "26K")

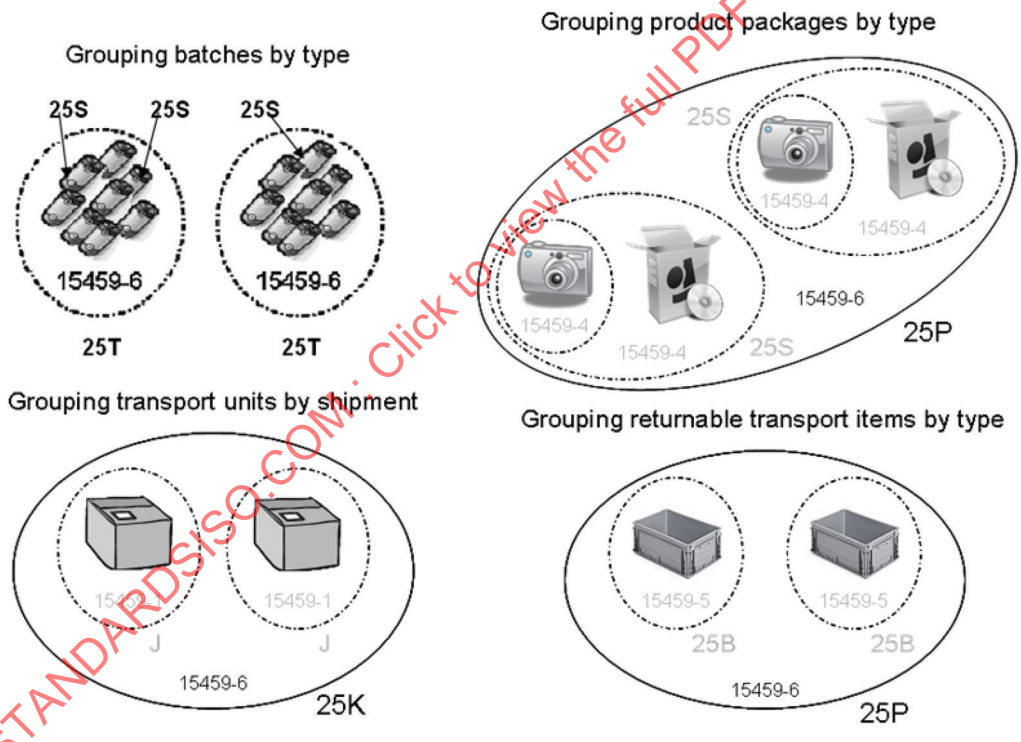


Figure A.1 — Examples of ways of grouping entities

A.1.1 Grouping by batch

With use of qualifier Data Identifier "25T" or Application Identifier "10" focus is on groupings by quality means, e.g. instances of a type of product is manufactured under the same conditions at a given time and is therefore given a unique batch number besides the identity focusing on type of product.

See ISO/IEC 15459-4 and ISO/IEC 15459-5.

A.1.2 Grouping by type

With use of qualifier Data Identifier “25P” or Application Identifier “01” focus is on groupings by characteristics, e.g. the type of an entity is specified to have defined characteristics and is therefore given a unique product number enabling different entity types with different characteristics to be separated from each other. Individual instances of a type of entity can then be individually identified by the assigned serial number.

See ISO/IEC 15459-4 and ISO/IEC 15459-5.

A.1.3 Grouping of transport units

With use of qualifier Data Identifier “25K” or “26K” or Application Identifier “402” focus is on groupings by shipment of deliveries, e.g. transport units of different orders can be grouped together for a shipment and the shipment is therefore given a unique shipment number to which the grouped transport units can be assigned. The individual transport units can be individually identified by the assigned license plate number (transport package number).

See ISO/IEC 15459-1.

Annex B
(informative)

Identities for groupings

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

B.1 Role of the Issuing Agency in providing application guidance for groupings

In addition to the requirements of an Issuing Agency, outlined in ISO/IEC 15459-2, each Issuing Agency is expected to provide a guideline if identities for item and/or material follow up is relevant to its IAC domain.

B.2 Identities of groupings

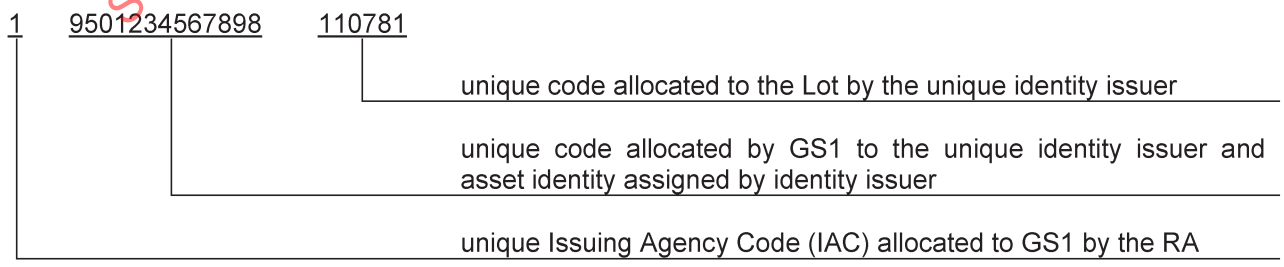
To illustrate the usage of an identity for groupings, the hypothetical example is given using the two issuing agencies (IAs) recognized by the Registration Authority (RA): GS1 and JIPDEC/CII (Japan Information processing Development Corporation / Electronic Commerce Promotion Centre).

The construction of the identity minimally includes the qualifier and string (Issuing Agency Code (IAC), Company Identification Number (CIN), and Serial Number (SN) assuming that the SN is unambiguous within the CIN). In some cases SNs are not unambiguous within the CIN but are unambiguous within a specific asset type, manufacturing line, etc. under the control of a company. If the SN 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.3 GS1 identity

The example show an identity made up from a combination of two qualifiers and their associated strings. The rules of GS1, to whom the Issuing Agency Codes “0” to “9” have been allocated by the Registration Authority, are that the string for traceability consists of 14 numeric digits followed by up to 20 alphanumeric characters. The first part of the numeric string of characters is allocated by GS1 to the unique identity issuer (GS1 Company Prefix) and the following characters are assigned by the unique identity issuer.

EXAMPLE 1 Typical string issued under the rules of GS1. In this example, the Application Identifiers used are “01” and “10”, the IAC/CIN/Asset identity is “19501234567898” and the Lot Number is “110781”. See Figure A.1 (Examples of ways of grouping entities).



This identity can be contained in an endorsed AIDC data carrier as defined by the Issuing Agency with the qualifiers GS1 Application Identifiers “01” and “10”.

For example a GS1-128 bar code symbol when scanned can be expected to pass the following identity to the computer system. See Table B.1.

Table B.1 — Data stream – GS1

	Identify			
]C1	**01**	**19501234567898**	**10**	**110781**
Symbology identifier	Qualifier	String	Qualifier	String

NOTE The Application Identifiers "01 and "10" are not included in the string, but are included in the identity. The symbology identifier provides information on the data carrier used. In the example above, the data carrier is a GS1–128 bar code.

B.4 JIPDEC/CII unique identification

The rules of JIPDEC/CII, to whom the Issuing Agency Code "LA" has been allocated by the Registration Authority, are that the identity consists of no more than 50 alphanumeric characters. The characters following the Issuing Agency Code "LA" are allocated by JIPDEC/CII to electronic-parts entities. The unique identity issuer then assigns the remaining characters and uses the qualifier recommended by JIPDEC/CII.

EXAMPLE 2 Typical unique identity issued under the rules of "JIPDEC/CII": In this example the qualifier is Data Identifier is "25T", the string is constructed using IAC "LA", the CIN is "506022000001", and the lot/batch number is "2005101312345". See Figure B.1.

The example below shows a JIPDEC/CII identity.

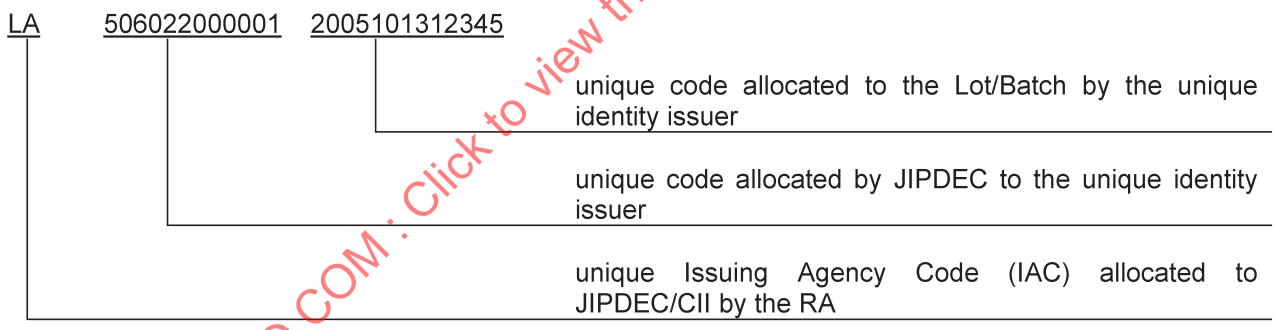


Figure B.1 — Unique identity for JIPDEC/CII Lot identification

This identity can be contained in an endorsed AIDC media as laid down by the Issuing Agency using the qualifier Data Identifier "25T".

For example a Code-128 bar code symbol when scanned can be expected to pass the following identity to the computer system. See Table B.2.

Table B.2 — Data Stream – JIPDEC/CII

	Identify	
]C0	**25T**	**LA506022000001200510131234 5**
Symbology identifier	Qualifier	String

NOTE The Data Identifier "25T" is not included in the string, but included in the identity. The symbology identifier provides information on the data carrier used. In the example above, the data carrier is a Code-128 bar code.

Annex C
(informative)

Use case for identities for groupings

C.1 An example of traceability (trace back)

Traceability that goes back through the supply chain is realized by the following procedures.

— Step 1: A consumer discovers a defect on a product and makes a complaint to a store.

— Step 2: The store notifies the identity defined in this part of ISO/IEC 15459 to the manufacturer.

— Step 3: The manufacturer investigates the following attributes of the group to which the goods belong from the obtained identity, and searches for the cause of the defect:

  — type of product

  — date of manufacture

  — production equipments or facilities

  — various kinds of parameters at the time of manufacture (temperature, pressure, others)

  — batch/lot number of materials

  — employee engaged in manufacture

C.2 An example of traceability (trace forward)

Traceability from a manufacturer through the supply chain is realized as follows.

— Step 1: A manufacturer discovers a poor part used in a product.

— Step 2: The manufacturer notifies the identity defined by parts of ISO/IEC 15459 to store(s).

— Step 3: Store(s) stop selling the product with the same identity defined in parts of ISO/IEC 15459.

— Step 4: A manufacturer agrees the recall and/or repair of the faulty product.

C.3 An example of traceability (a safe waste treatment process)

Traceability in a waste treatment process is realized as follows.

— Step 1: A certain product reaches the end of its useful life and is carried to a waste disposal plant.

— Step 2: A waste disposer identifies the identity for that product grouping.

— Step 3: Depending on information services available, the waste disposer can either look up appropriate attributes of the product, or contact the manufacturer for relevant information. This attribute-based information should include

  — whether the product contains a recoverable component or a dangerous component, or toxic substance,

  — whether the product contains components upon which a duty of recovery is imposed or not,