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Information technology — Automatic identification and data capture techniques — Unique identification — Part 6: Groupings

Technologie d'information — Identification automatique et techniques de capture de données — Identification uniques — La partie 6: Groupements

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Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques* prepared ISO/IEC 15459-6.

ISO/IEC 15459 consists of the following parts, under the general title *Information technology — Automatic identification and data capture techniques — Unique identification*:

- *Part 1: Individual transport units*
- *Part 2: Registration procedures*
- *Part 3: Common rules*
- *Part 4: Individual products and product packages*
- *Part 5: Individual returnable transport items (RTIs)*
- *Part 6: Groupings*

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 information is often held on computer systems, and may be exchanged between parties involved via EDI (Electronic Data Interchange) and XML (eXtensible Markup Language) messages.

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 minimising 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 may include additional rules for which level of identification should be used, may be 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. To address management needs different classes of identifiers are recognized in the various parts of ISO/IEC 15459, which allows different requirements to be met by the unique identifiers associated with each class.

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 may be possible to use together 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.

NOTE: 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 definition as used, for example, in ISO/IEC 15459-1, ISO/IEC 15459-4, and ISO/IEC 15459-5.

2 Normative references

The following referenced documents are indispensable for the application of this document. 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 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes*

ISO/IEC 9834-1, *Information technology — Open Systems Interconnection — Procedures for the operation of OSI Registration Authorities: General procedures and top arcs of the ASN.1 Object Identifier tree*

ISO/IEC 15418, *Information technology — Automatic identification and data capture techniques — GS1 Application identifiers and ASC MH 10 data identifiers and maintenance*

ISO/IEC 15434, *Information technology — Automatic identification and data capture techniques — Syntax for high-capacity ADC media*

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 — Part 1: General terms relating to AIDC*

GS1 General Specifications, *GS1*

3 Terms, definitions and abbreviated terms

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

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 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 or qualifiers used in the identity of a grouping per the direction of the Issuing Agency may be one of the following defined in ISO/IEC 15418 or ISO/IEC 9384-1:

- GS1 Application Identifiers **01** plus attribute information common to the grouping like Batch Number (**10**), Expiry Date (**17**), Variant (**20**), etc. or **402** (See GS1 General Specifications, latest version)

  If this method is used to create the identity each Issuing Agency, or unique identity issuer if authorised by its Issuing Agency, shall select the appropriate GS1 Application Identifier to act as the qualifier of the identity for the grouping:.

  - the GS1 Application Identifier “**01**”, GTIN: Global Trade Item Number which include and starts with an Issuing Agency Code combined with the GS1 Application Identifier for attribute information common to the grouping like Batch Number, Date Coding, etc.

  - the GS1 Application Identifier “**402**”, GSIN: Global Shipment Identification Number which include and starts with an Issuing Agency Code

- ASC MH 10 Data Identifier **25P**, **25T**, **25K** or **26K** (see ANS MH10.8.2, latest version)

  If this method is used to create the identity each Issuing Agency, or unique identity issuer if authorised by its Issuing Agency, shall select the appropriate ASC MH10 Data Identifier to act as the qualifier of the identity for the grouping:

  — the ASC MH 10 Data Identifier “**25P**”, Product number which include and starts with an Issuing Agency Code.

  — the ASC MH 10 Data Identifier “**25T**”, Batch/lot number which starts with an Issuing Agency Code.

— the ASC MH 10 Data Identifier "**25K**", Carrier Bill of Lading/Waybill/Shipment identification which include and starts with an Issuing Agency Code.

— the ASC MH 10 Data Identifier "**26K**", Supplier Bill of Lading/Waybill/Shipment identification which include and starts with an Issuing Agency Code.

NOTE There are situations where the identity may need to 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 authorised 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 only contain upper-case alphabetic characters and numeric digits of the invariant character set of ISO/IEC 646, see Annex A in ISO/IEC 15459-3.

NOTE An Issuing Agency may put additional restrictions on the repertoire for identities for groupings using its IAC.

Any data processing system shall be capable of processing identities using the full repertoire of characters permitted for identities for groupings.

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

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”)

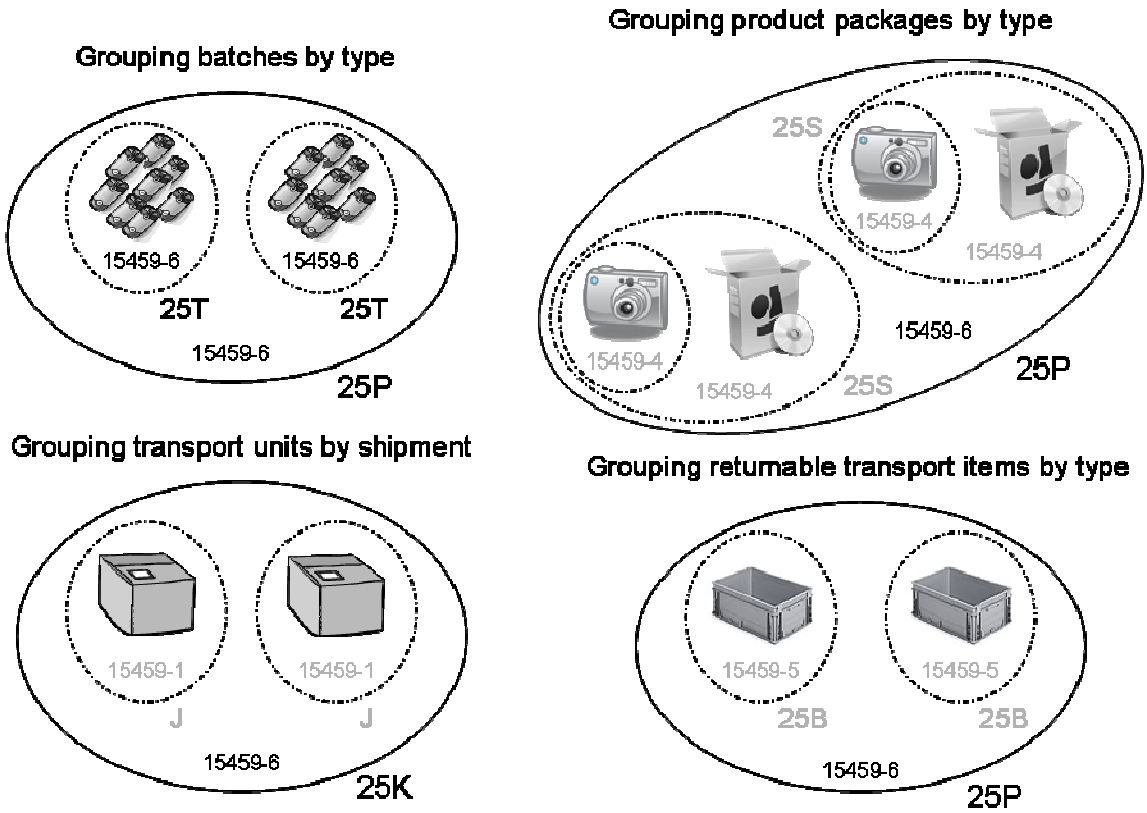


Figure A.1 – Examples of ways of grouping entities

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 Parts 4 & 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 Parts 4 & 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 Part 1.

Annex B
(informative)

Identities for groupings

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

In addition to the requirements of an Issuing Agency, outlined elsewhere in this International Standard, 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

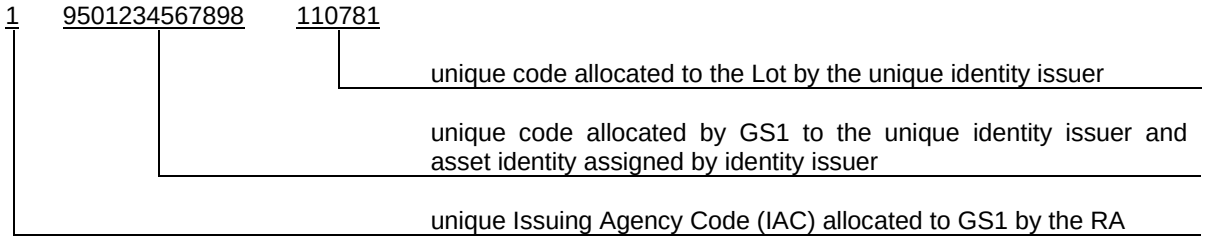
To illustrate the usage of an identity for groupings, the hypothetical example is given using the two issuing agencies (IAs) recognised by the Registration Authority (RA): GS1 and JIPDEC/CII (Japan Information processing Development Corporation / Electronic Commerce Promotion Centre).

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.



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 when scanned can be expected to pass the following identity to the computer system. See Table A.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.

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.

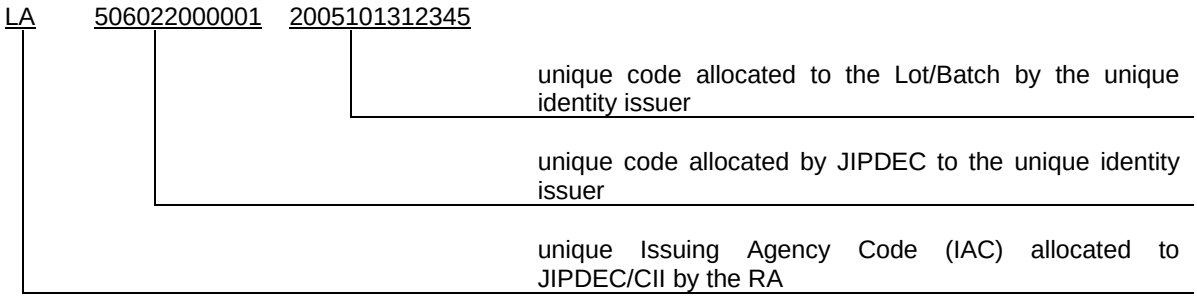


Figure B.1 — Unique identity for JIPDEC/CII Lot identification

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 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**	**LA506022000000012005101312345**
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.

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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 realised 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 realised 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 realised 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,

— the safe recovery method for dealing with a dangerous component, or toxic substance.

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[4] ISO/IEC 15459-4, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 4: Individual products and product package*

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

[6] *ISO/IEC 15424* Information technology — Automatic identification and data capture techniques — Data Carrier Identifiers.

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