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Information technology — Automatic identification and data capture techniques — Unique identification — Part 5: Individual returnable transport items (RTIs)

Technologie d'information — Identification automatique et techniques de capture de données — Identification uniques — La partie 5: Articles qu'on doit rendre individuels de transport (RTIs)

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

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.

Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques* prepared ISO/IEC 15459-5.

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 returnable transport items (RTIs) defined in this part of ISO/IEC 15459, and represented in AIDC media attached to the RTIs, meets the needs defined in ISO/IEC 15459-3, Common rules.

Information technology — Automatic identification and data capture techniques — Unique identification — Part 5: Individual returnable transport items (RTIs)

1 Scope

This part of ISO/IEC 15459 specifies a unique string of characters for the identification of individual returnable transport items (RTIs). The character string is intended to be represented in a bar code label or other AIDC media attached to the item to meet item management needs. To address management needs different classes of identities are recognised 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 for RTIs, with the identity being relevant for the complete life cycle of the item, are defined and supported by example.

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 17364, *Supply chain applications of RFID — 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 returnable transport items (RTIs)

Each individual RTI shall be unambiguously identified by a qualifier and a string as defined in Clause 5 so that items of this type can be distinguished from items of other types.

The qualifier for a RTI may be selected from the following options as defined in ISO/IEC 15418 or ISO/IEC 9384-1:

- GS1 Application Identifier **8003**.

  If this class identification method is used, the Issuing Agency, or identity issuer if authorised by its Issuing Agency, shall select GS1 Application Identifier 8003 as the qualifier component of the identity.

- ASC MH 10 Data Identifier, as defined in ISO/IEC 15418 (ANS MH10.8.2), **25B**.

  If this class identification method is used, each Issuing Agency, or identity issuer if authorised by its Issuing Agency, shall select ASC MH 10 Data Identifier 25B as the qualifier component of the identity.

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

  — 1 0 15459 5: for an RTI 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 5 1: for an RTI identifier for item management equivalent to GS1 Application Identifier **8003**;

  — 1 0 15459 5 3: for an RTI identifier for item management equivalent to ASC MH 10 Data Identifier **25B**;

- When employing an ISO/IEC compliant high capacity AIDC data carrier an additional option is the use of application family identifiers (AFIs):

  — 10100011: for an RTI, not containing hazardous material, identifier for item management defined by the IAC. Does not support mapping to GS1 EPC (Electronic Product Code).

  — 10101000: for an RTI, containing hazardous material, identifier for supply chain management defined by the IAC. Does not support mapping to GS1 EPC (Electronic Product Code).

5 Identity for returnable transport items (RTIs)

5.1 General

An identity is assigned to an RTI by an 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.

5.2 Maximum number of characters permissible in a string

The identity for individual RTIs 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 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 RTIs using its IAC.

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

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
(informative)

Unique identification of returnable transport items (RTIs)

A.1 Role of the Issuing Agency in providing application guidance for returnable transport items

In addition to the requirements of an Issuing Agency, outlined elsewhere in ISO/IEC 15459, each Issuing Agency is expected to provide guidelines if individual RTI identification is relevant to its IAC domain.

A.2 Considerations with returnable transport item identification

To illustrate the usage of an individual identity, the hypothetical example is given using the two issuing agencies (IAs) recognised by the Registration Authority (RA), GS1 and ODETTE.

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.

A.3 GS1 unique identification

The rules of GS1, to whom the Issuing Agency Codes “0” till “9” have been allocated by the Registration Authority, are that the string for RTIs consists of no more than 14 numeric digits followed by no more than 16 alphanumeric characters. The first numeric string of characters is allocated by GS1 to the string issuer (company prefix) and the following characters are assigned by the string issuer.

EXAMPLE 1: Typical RTI identity issued under the rules of GS1. In this example, the IAC/CIN/Asset Identity is “1009875610013” and the serial number is “100110780”. See Figure A.1.

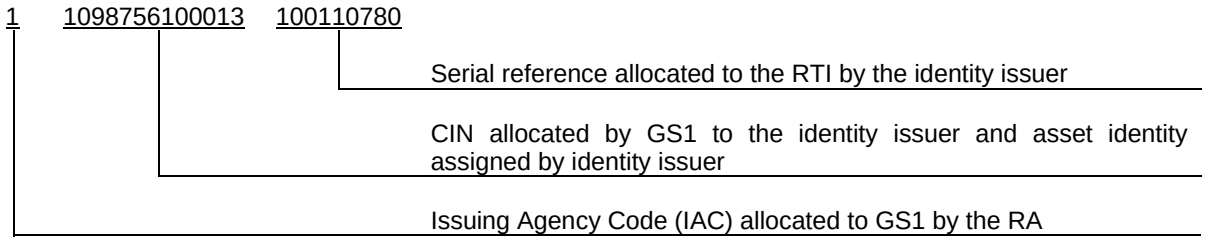


Figure A.1 —GS1 string for returnable asset

This string can be contained in a GS1-128 bar code, or other AIDC media, with the GS1 Application Identifier “8003”.

The bar code when scanned can be expected to pass the following data string (Table A.1) to the computer system.

Table A.1 — Data stream – GS1

Symbology identifier	Identity	
	Qualifier	String
]C1	**8003**	**1009875610001310011078O**

NOTE The Application Identifier “8003” is not included in the string, but included in the identity. The symbology identifier provides information on the data carrier used.

A.4 ODETTE unique identification

The rules of ODETTE, to whom the Issuing Agency Code “OD” has been allocated by the Registration Authority, are that the UII – RTI consists of no more than 50 alphanumeric characters. The characters following the Issuing Agency Code “OD” are allocated by ODETTE to automotive entities. The string issuer then assigns the remaining characters. See Figure A.2.

EXAMPLE 2: Typical the UII – RTI issued under the rules of “ODETTE”: In this example, the IAC is “OD”, the CIN is “SYST”, and the serial number is “100110780”.

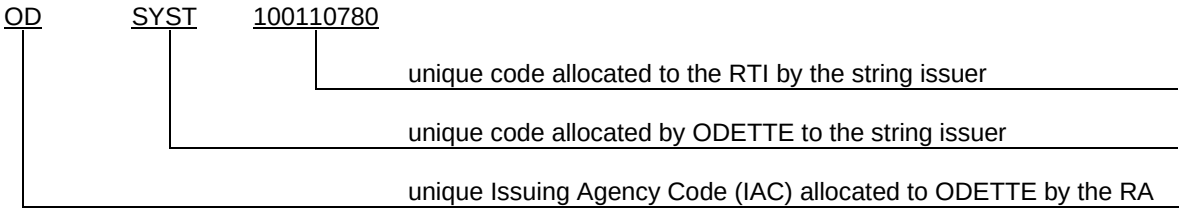


Figure A.2 — String for ODETTE RTI identification

This string can be contained in a bar code, or other AIDC media, using Data Identifier “25B”.

The bar code when scanned can be expected to pass the following data string (Table A.2) to the computer system.

Table A.2 — Data Stream – ODETTE

Symbology identifier	Identity	
	Qualifier	String
]C0	**25B**	**ODSYST100110780**

NOTE The Data Identifier “25B” is not included in the string, but included in the identity. The symbology identifier provides information on the data carrier used.

Annex B
(informative)

Returnable versus recyclable and reusable items

B.1 Returnable items

With a returnable item the ownership of the item remains unchanged, i.e. others can use the item (“borrow” it) but the ownership is not changed.

A typical use of a returnable item is for transportation of goods where the item can be reused in terms of that the content and carrier can change but the owner is still the same.

B.1.1 Identification

This part of ISO/IEC 15459 covers identification for individual RTIs.

B.2 Recyclable item

With a recyclable item the ownership of the item will change over time, i.e. the actual user (that has bought an item) can decide if the item is to be recycled or not.

A typical use recyclable item is a battery, which can be disposed at a recycling station and parts of the content can be recycled and used for manufacturing of new batteries.

B.2.1 Identification

ISO/IEC 15459-4 addresses identification of individual recyclable items (products).

B.3 Reusable item

With a reusable item the ownership will change over time, i.e. the actual user (that has bought an item) can decide if the item is to be reused or not.

A typical use recyclable item is a hard plastic bottle, which can either be reused by the user (i.e. filling the bottle with new content after cleaning it) or disposed at a recycling station and depending on its constituents parts can be reused (i.e. cleaned and refilled) or recycled and used for “manufacturing” of new bottles.

B.3.1 Identification

ISO/IEC 15459-4 addresses identification of individual reusable items (products).

B.4 Simple overview

The figure below is to show a very simple overview of the interpretation of the terms returnable, recyclable and reusable.

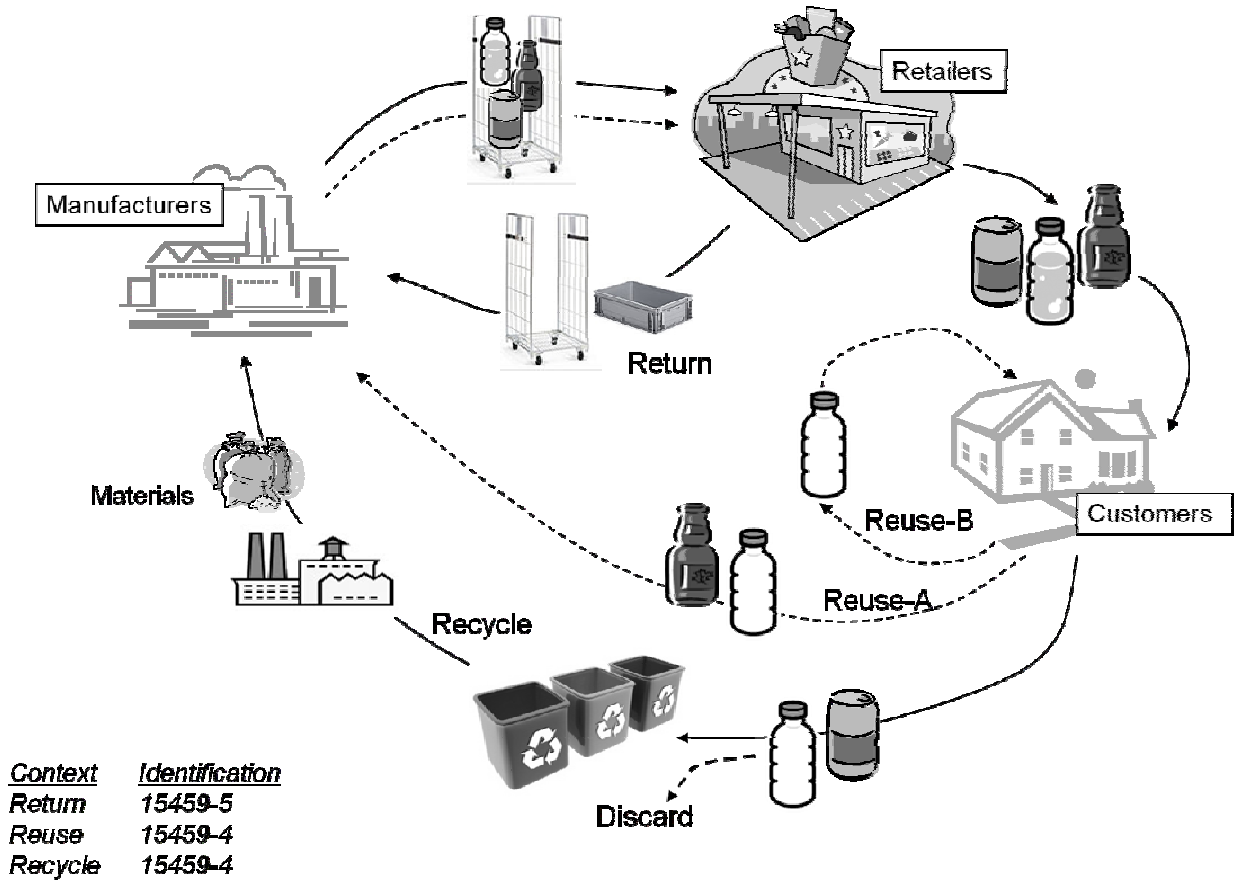


Figure B.1 – Overview of return vs. reuse and recycle

B.5 Ownership and characteristics

The table below is to give information about status of ownership and typical characteristics as well as exemplified by images for the following types

- Returnable Transport Items
- Reuse transport items, packages
- Recycle or waste packages, cans and bottles

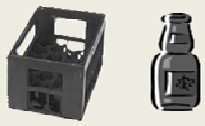
	Ownership	Characteristics	Images
Returnable Transport Items	Unchanged	➢Asset ➢Be returned & reused ➢Be managed by owners ➢15459-5 UII	
Reuse transport items, packages	A Changed (with deposit)	➢Not asset ➢Be returned for reuse ➢Be managed by manufacturers ➢15459-4 UII	
	B Changed	➢Not asset ➢Reuse by customers ➢15459-4 UII	
Recycle or waste packages, cans, bottles	Changed	➢Not asset ➢One way use ➢recycle/discard ➢15459-4 UII	

Table B.1 – Ownership and characteristics for “transport items”

Bibliography

[1] ISO/IEC Directives, Part 2: *Rules for the structure and drafting of International Standards*, 2004

[2] ISO 15394, *Packaging — Bar code and two-dimensional symbols for shipping, transport and receiving labels*

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

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

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

[6] ISO/IEC 15459-6, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 6: Groupings*

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