INTERNATIONAL STANDARD

ISO
28005-2

First edition
2011-03-01

Security management systems for the supply chain — Electronic port clearance (EPC) —

Part 2:
Core data elements

Systèmes de management de la sécurité pour la chaîne d'approvisionnement — Opérations portuaires assistées par systèmes électroniques —

Partie 2: Éléments de données principaux

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW

(standards.iteh.ai)

ISO 28005-2:2011
https://standards.iteh.ai/catalog/standards/sist/c46d0c16-0844-483d-8acc-
b773608eb0a7/iso-28005-2-2011

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.

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

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member 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 shall not be held responsible for identifying any or all such patent rights.

ISO 28005-2 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*.

This first edition of ISO 28005-2 cancels and replaces ISO/PAS 28005-2:2009 which has been technically revised.

ISO 28005 consists of the following parts, under the general title *Security management systems for the supply chain — Electronic port clearance (EPC)*:

— *Part 2: Core data elements*

The following part is under preparation:

— *Part 1: Message structures*

Security management systems for the supply chain — Electronic port clearance (EPC) —

Part 2:
Core data elements

1 Scope

1.1 General

This part of ISO 28005 contains technical specifications that facilitate efficient exchange of electronic information between ships and shore for coastal transit or port calls. It is intended to cover safety and security information requirements related mainly to the relationships between the ship and the port and coastal state authorities as defined in this subclause.

This part of ISO 28005 contains the definition of core data elements for use in electronic port clearance (EPC) messages. It contains definitions of core data elements for electronic messaging between ships and shore in the areas of safety, security and marine operations. It does not define any structuring of messages or provide any guidance on what information is required for a particular purpose; it is rather a general data dictionary for safety, security or operation-related maritime information.

It is intended for use in XML messages and will for that reason differ somewhat from the similar trade data elements directory (TDED) International Standard, ISO 7372.

The core data elements defined in this part of ISO 28005 are specified so that their meaning and interpretation in general are independent of the context in which they are used.

This part of ISO 28005 does not define the message formats required to exchange information.

1.2 Application of the core data elements

This part of ISO 28005 contains definitions of core data elements for electronic port clearance (EPC). These elements cover all requirements for ship-to-shore and shore-to-ship reporting as defined in the following.

a) All FAL standard declarations (FAL 1 to 7) as defined in the FAL Convention.

b) ISPS reporting requirements as defined in ISPS and MSC 1305.

c) All general ship reporting requirements as defined in IMO Resolution A.851.

d) Recommended reporting on ship-generated waste as defined in MEPC 644 (mandatory within the European Union, as described in EU/2000/59).

e) Required reporting as defined in the bulk loading and unloading code IMO Resolution A.862.

f) ETA reporting to pilot station as defined in IMO Resolution A.960.

Annex L gives a cross-reference between the above references and the core data elements.

This part of ISO 28005 can also be used for information exchanges between the ship and the ship agent, the port and ship operator or manager. It will not necessarily cover issues such as customs clearance of imported or exported goods or transport service provisions to goods owners.

1.3   Types of data elements defined by this part of ISO 28005

Figure 1 shows some of the types of elements that are defined and referenced in this part of ISO 28005. The grey boxes represent objects that are not defined in this part of ISO 28005, but which are respectively basis information and results of using this part of ISO 28005.

The top-most grey box represents standard data types as defined in XML Schema Part 2 (XSD-2). The bottom-most grey box represents an electronic XML message containing data elements defined by using this part of ISO 28005.
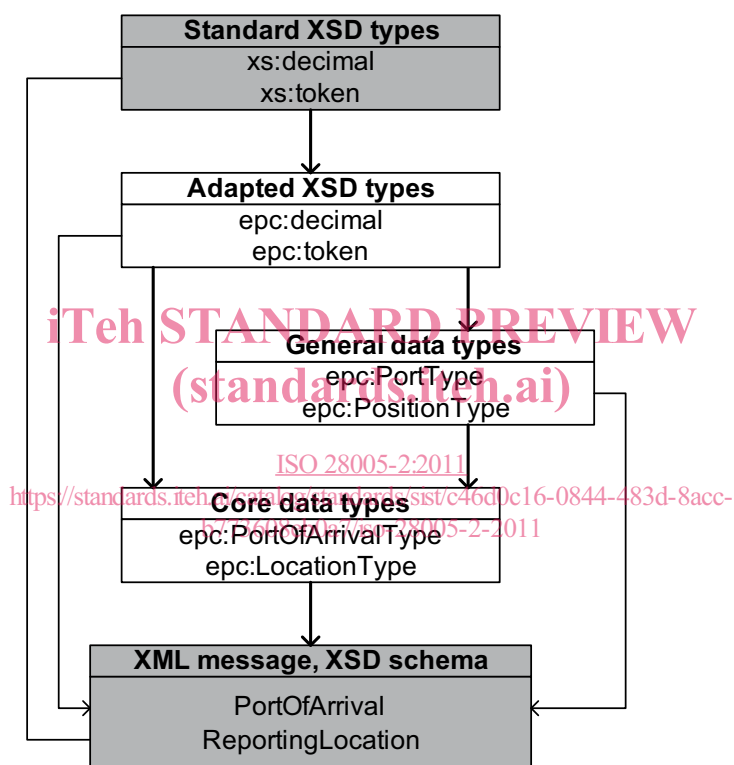
Figure 1 — Elements of this part of ISO 28005

Figure 1 does not include all elements in each group, but has selected a few from each group as examples. From the top downwards, the defined elements are as follows.

⸺ Adapted XSD types: These are basic XSD types with additional restrictions that apply for the use of these elements in this part of ISO 28005.

⸺ General data types: These are data types that represent common concepts like a port description or a certificate which normally need to be specialized more to be given a context-specific meaning.

⸺ Core data types: These are data types that also contain a contextual meaning to the more generic concept, such as an arrival port instead of a general port or a reporting location instead of a general location.

This part of ISO 28005 does not prohibit the use of data types other than the EPC Core Elements when messages are defined (this is indicated with the thin arrows in Figure 1). However, such data elements will be given a specific semantic meaning in the specification of the message format.

1.4 Structure of the data element descriptions

Figure 2 gives an outline of the structure of this part of ISO 28005. The two rectangles at the top represent the general data types outlined in the previous clause while the row of rectangles at the bottom represents the EPC core elements.

Adapted XSD types (Clause 5)								
General data types (Clause 6)								
Ship ID 7.2	Cargo 7.3	Crew and passenger 7.4	Class and certificates 7.5	Security 7.6	Service related 7.7	Ship particulars 7.8	Vessel operation 7.9	Waste and environment 7.10

Figure 2 — Overview of the structure of this part of ISO 28005

The groups are loosely based on the order in which they appear on typical FAL forms:

a) Ship ID: ship identification and contact details.

b) Cargo: data related to cargo and cargo types.

c) Crew and passenger: crew- and passenger-related data.

d) Class and certificates: data related to class and certificates kept on board.

e) Security: mainly ISPS-related data.

f) Service-related: data related to services requested by the ship, including message headers and clearance request and status.

g) Ship particulars: static data about the ship.

h) Vessel operation: data that is dependent on current operation or voyage; also physical data that changes, e.g. with loading such as draught.

i) Waste and environment: currently, this section contains information about waste.

The grouping of core elements is for convenience only and need not result in any particular structuring of EPC messages. Additionally, the data elements, when defined in an XSD file, will not use any formal grouping; all data elements will have the same name space.

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 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes*

ISO 6346, *Freight containers — Coding, identification and marking*

ISO 9711-1, *Freight containers — Information related to containers on board vessels — Part 1: Bay plan system*

ISO/IEC 10646:2003, *Information technology — Universal Multiple-Octet Coded Character Set (UCS)*

IETF RFC 3986, *Uniform Resource Identifier (URI): Generic Syntax*

International Maritime Dangerous Goods (IMDG) Gde, IMO

MEPC.1/Circ.644, *Standard Format for the Advance Notification Form for Waste Delivery of Port Reception Facilities*

UNECE R21 (UNECE Recommendation No. 21), *Codes for Passengers, Types of Cargo, Packages and Packaging Materials (with Complementary Codes for Package Names)*

UNTDD, *United Nations Directories for Electronic Data Interchange for Administration, Commerce and Transport*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
character
atomic unit of text as specified by ISO/IEC 10646:2003

NOTE   Legal characters include: tab, carriage return, line feed, and the legal characters of The Unicode Standard and ISO/IEC 10646. The editions cited in this part of ISO 28005 were current at the time of publication; new characters could be added to The Unicode Standard or ISO/IEC 10646 by amendments or future editions.

3.1.2
core data element
data object of a type defined in Clause 7 of this part of ISO 28005:2010.

NOTE   The core data element will be represented as the contents between XML start and end tags, where the tags have the same name as the core data type with the trailing string "Type" omitted.

3.1.3
core data type
data type defined in Clause 7 of this part of ISO 28005:2010.

NOTE   All core data types will have a trailing "Type" in their name which will be removed when the data type is instantiated as a core data element.

3.1.4
data type
core data type (3.1.3) or another data type defined in Clauses 5 or 6 of this part of ISO 28005:2010.

NOTE   All data types will have a name ending with "Type".

3.1.5
electronic port clearance
EPC
process of exchanging information between the ship and its agent and various parties on shore to allow the ship clearance to enter port and berth

NOTE   EPC does not necessarily include customs clearance of goods that are imported or exported.

3.1.6
leg
part of a voyage between a departure port and an arrival port without any intervening port calls

3.1.7
OBO
oil-bulk-ore carrier
O/O carrier
ship whose design is similar to a conventional bulk carrier but that is equipped with pipelines, pumps and an inert gas plant so as to enable the carriage of oil cargoes in designated spaces

3.1.8
voyage
sailing of the ship from an initial departure port to a final arrival port with or without a number of intervening port calls

NOTE 1   What constitutes a voyage is defined by the ship's operator or its owner.

NOTE 2   See also **leg** (3.1.6).

3.1.9
XML schema
definition of the structure of an XML document, written in the XML schema language (XSD)

NOTE   The XML schema language is in itself a valid XML structure.

3.2   Abbreviated terms

BLU   bulk loading and unloading[1)]

DG   dangerous goods[2)]

HS   World Customs Organization's Harmonized System

FAL   Facilitation, IMO's Facilitation Committee and standard forms defined in the FAL Convention

IRI   Internationalized Resource Identifier[19]

ISM   international safety management[3)]

ISPS   international ship and port facility security[4)]

RORO   Roll-on/Roll-off (ship)

TDED   Trade Data Elements Dictionary[2]

---

1)   The BLU code is described in the annex to IMO Resolution A.862.

2)   The term "harmful and noxious substances" is also sometimes used instead of "dangerous goods".

3)   The ISM code is defined in Chapter IX of Reference [6].

4)   The ISPS code is defined in Chapter XI-2 of Reference [6].

URI   Uniform Resource Identifier

URL   Uniform Resource Locator

XML   Extensible Markup Language

XSD   XML Schema Definition Language

4 General provisions

4.1 Use of XML name space

4.1.1 XSD name space

All data elements defined in the Schema standards[16][17], and which are used in this part of ISO 28005, use the name space "xs". Thus, the data type name will be prefixed with "xs:". This corresponds to the XSD definition file header including the following attribute:

```
<xs:schema ...
        xmlns:xs="http://www.w3.org/2001/XMLSchema" ...
```

4.1.2 ISO 28005-1 name space

All data types defined in this part of ISO 28005 will be defined in the namespace "epc". Thus, the data type name will be prefixed with "epc:". This corresponds to the XSD file header including the following attribute:

```
<xs:schema ...
        xmlns:epc="http://www.iso.org/28005-1" ...
```

4.2 Principle for creating tag names in a message file

This part of ISO 28005 defines data types that can be used to construct an XML message for exchange of information between ship and shore. Each information element in the XML file shall have a tag name derived from the corresponding core data type defined in this part of ISO 28005. The following rules apply.

a) If the information element in the XML file corresponds directly to a core data type defined in this part of ISO 28005, the tag name of that information element shall be the same as that for the type name without the trailing "Type" or "ContentType" that the core data type has.

b) If a new information element is created, it should get a name and type which reflects the principles employed in this part of ISO 28005.

4.3 Structure of data type definitions

4.3.1 Name

All data types defined in this part of ISO 28005 will be given a name that is also included as the first part of the heading for the clause where the data type is defined.

The data type name follows the specifications for XML tag names[15], with the following additional constraints.

a) The name will always end with the string "Type".

b) Enumerated data types will have the postfix "ContentType".

NOTE 1   Some core data elements can also have the ending "Type". In that case, the corresponding core data type will have the postfix "TypeType".

c) This part of ISO 28005 will use the "Upper Camel Case" in all core data types, i.e. the first letter will be upper case and, when the tag name consists of a number of concatenated words, each of the words will start with an upper case letter.

d) The name consists only of characters from the sets (A-Z), (a-z) and, exceptionally, (0-9).

NOTE 2   The names have been selected to be generally understandable in the context of ship-to-shore communication for port clearance. The names are in normal British English without any special characters. Names are in singular form except where the data element contains a list of items, in which case the tag name is in plural form.

4.3.2 Definition

Each data type will have a definition that is intended to give an unambiguous description of what the data element shall contain and in what context it is valid. This is the first paragraph after the heading of the clause.

4.3.3 Type

Each data type will be defined as a section of XSD code. This section will only cover the actual data type definition and will not be a valid XML document in itself. Annex M gives a brief overview of the syntax elements used, but the user of this part of ISO 28005 should refer to Reference [16] for the definitive descriptions.

4.3.4 Representation

Additional information about how the data field shall be formatted will be contained in the representation paragraph. This may give, for example, the normative reference to the official sources of enumeration codes.

4.4 Principles for defining enumerated types

Enumerated types, i.e. types that are associated with a fixed set of code values, are defined in one of three ways.

a) When the code set is small and not defined and maintained by parties external to this part of ISO 28005, the allowed code values are listed in the definition of the data type as XSD constraints.

b) If the code set is larger, but not defined by external parties, the code set is included in a normative annex. Subclause 8.2 defines how such code sets can be put into a separate XML file.

c) When the code set is maintained by an external party, the definition will only define the data type as a token and make a reference to where the code set can be found and how the code set shall be used in the core data element. An informative annex will normally contain a list of some of the most common codes. Subclause 8.2 can be used to encode the values in XML.

NOTE   It will not be possible to use an XSD schema to validate the use of codes defined according to items b) and c) above.

4.5 Character sets for data fields

This part of ISO 28005 allows all character sets that are supported by XML (see 8.1). Additional restrictions may be specified in the representation part of the data type definitions.

4.6 No use of XML attributes

The data types defined by this part of ISO 28005 do not use XML attributes. All information is contained within XML start and stop tags.

4.7 Empty tags

Mandatory tags, i.e. tags that are not marked with minOccurs="0", shall normally contain valid data. Tags that are optional may be left out of the message, may be empty, i.e. have no end tag, or may have empty content. The receiver of messages shall treat all forms of empty tags the same.

4.8 Defaults for minOccurs and maxOccurs

According to Reference [16], the default values for minOccurs and maxOccurs equal 1. This is used in this part of ISO 28005 to shorten the type specifications in the data type definition clauses.

5 Adapted XSD data types

5.1 Introduction

The adapted XSD data types used in this part of ISO 28005 are defined in Reference [17]. Subclauses 5.2 to 5.10 contain additional restrictions on the use of these data types that apply in this part of ISO 28005.

5.2 epc:anyURI – Generalized URI

Definition:
This data type contains a valid generalized URI. This may be a mail address, prefixed by "mailto:", or an external file, prefixed by "file:".

Type:
```
<xs:simpleType name="anyURI">
   <xs:restriction base="xs:anyURI"/>
</xs:simpleType>
```

Representation:
All generalized URIs (which may be encoded as an IRI) allowed by Reference [17] are also allowed in this part of ISO 28005. However, to ensure compatibility with older systems, users are advised to use the URL type strings (seven-bit character set) until the IRI concept is sufficiently well implemented.

5.3 epc:boolean – Boolean flag

Definition:
This data type contains a date flag that can have the logical values true or false.

Type:
```
<xs:simpleType name="boolean">
   <xs:restriction base="xs:boolean"/>
</xs:simpleType>
```

Representation:
All flag values allowed in the XSD definition given in Reference [17] are allowed. When the boolean type is used in contexts where the value represents an answer to a yes/no question, the true value shall represent "yes" while the false value represents "no".

5.4 epc:date – General date

Definition:
This data type contains a date without additional time of day or time zone information.

Type:
```
<xs:simpleType name="date">
```

```
    <xs:restriction base="xs:date"/>
</xs:simpleType>
```

Representation:

This is a date in the standard XSD format, without any time zone code in the value.

Senders of date information should not include time zone information. Receivers should be prepared to accept a time zone code, but it shall be disregarded in further processing of the data.

5.5 epc:dateTime – Time and date, with time zone

Definition:

This data type contains a date with additional time of day and time zone information.

Type:

```
<xs:simpleType name="dateTime">
  <xs:restriction base="xs:dateTime"/>
</xs:simpleType>
```

Representation:

This is a date and time in the standard XSD format, with a time zone code in the value.

Senders of date and time information shall include time zone information. Receivers should be prepared to accept values without time zone codes. In this case, the time zone is undefined and proper actions should be taken by the systems processing this data.

NOTE 1   The time zone value "Z" is a valid code and refers to GMT or UTC time.

NOTE 2   The seconds field can contain the value 60 (when leap seconds occur).

5.6 epc:decimal – Decimal number

Definition:

This data type is used to specify a quantity.

Type:

```
<xs:simpleType name="decimal">
    <xs:restriction base="xs:decimal"/>
</xs:simpleType>
```

Representation:

The decimal type represents a subset of the real numbers, which can be represented by decimal numerals. The value space of decimal is the set of numbers that can be obtained by multiplying an integer by a non-positive power of ten, i.e. expressible as $i \times 10^{-n}$ where i and n are integers and $n \geqslant 0$. Precision is not reflected in this value space; the number 2.0 is not distinct from the number 2.00. The order relation on decimal is the order relation on real numbers, restricted to this subset.

The decimal has a lexical representation consisting of a finite-length sequence of decimal digits ($\#\times30$–$\#\times39$) separated by a period as a decimal indicator. An optional leading sign is allowed. If the sign is omitted, "+" is assumed. Leading and trailing zeros are optional. If the fractional part is zero, the period and following zeros can be omitted. For example: −1.23, 12678967.543233, +100000.00, 210. See Reference [17].

NOTE   The format requires the use of the period (.) as decimal sign. Some national standards use, e.g., a comma (,) for this purpose. In such cases, the sending or receiving application performs the translation.