INTERNATIONAL STANDARD

ISO 15394

Third edition
2017-11

Packaging — Bar code and two-dimensional symbols for shipping, transport and receiving labels

Emballage — Codes à barres et symboles bidimensionnels pour l'expédition, le transport et les étiquettes de réception

Reference number
ISO 15394:2017(E)

© ISO 2017



COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword ..... **v**

Introduction ..... **vi**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **2**

4 Concepts **2**
4.1 Principles 2
4.2 Transport package, unit load and transport unit 3
4.2.1 Transport package 3
4.2.2 Unit load 3
4.2.3 Transport unit 3
4.3 Unique transport unit identifier 3
4.4 Label formats 3
4.4.1 Base shipping/transport/receiving label 3
4.4.2 Extended shipping/transport/receiving label 3

5 Data content **4**
5.1 Data representation 4
5.1.1 Data in linear bar code symbols 4
5.1.2 Data in two-dimensional (2D) symbols 4
5.1.3 Data in human-readable form 4
5.2 Data elements 4
5.2.1 Unique transport unit identifier 4
5.2.2 Ship to 5
5.2.3 Ship from 5
5.2.4 Key to carrier's database 5
5.2.5 Key to customer's database 5
5.2.6 Other data elements 6
5.3 Concatenating data fields in linear bar code symbols 6
5.3.1 Using GS1 Application Identifiers (AI) 6
5.3.2 Using ANSI MH10.8.2 Data Identifiers (DI) 6
5.4 Structured data files 6
5.4.1 General 6
5.4.2 Shipping and receiving data 6
5.4.3 Supporting documentation application 6
5.4.4 Carrier sorting and tracking applications 7
5.5 Data area identification 7

6 Data carriers **7**
6.1 Linear bar code symbols 7
6.2 Two-dimensional symbols 7
6.3 Human-readable information 8
6.3.1 Human-readable interpretation 8
6.3.2 Human translation 8
6.3.3 Data area titles 8
6.3.4 Free text and data 8
6.3.5 Choice of language 8

7 Label design **8**
7.1 General considerations 8
7.2 Layout 9
7.2.1 Base label layout 9
7.2.2 Extended label layout 9
7.2.3 Other data 10
7.3 Label dimensions 10

© ISO 2017 – All rights reserved

7.3.1 General considerations 10
7.3.2 Label height 10
7.3.3 Label width 10
7.3.4 Data limits 10
7.4 Text size 11
7.4.1 General considerations 11
7.4.2 Specific text dimensions 12
7.5 Material 12

8 Label placement 13
8.1 General considerations 13
8.2 Unit loads (pallets) 13
8.3 Transport packages 13
8.4 Other transport units 14

Annex A (normative) **Guidelines for using linear bar code symbols 15**

Annex B (normative) **Guidelines for using 2D symbols 18**

Annex C (informative) **Designing compliant labels using a building block approach 37**

Annex D (informative) **Issues to consider in the drafting of application guidelines or standards conforming to this document 41**

Annex E (informative) **Label examples 44**

Annex F (informative) **Recommended label locations on various containers 61**

Annex G (informative) **The impact of systems confronted with multiple symbologies and formats 64**

Bibliography 68

 © ISO 2017 – All rights reserved

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.

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 ISO documents 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 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 voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 122, *Packaging*.

This third edition cancels and replaces the second edition (ISO 15394:2009), which has been technically revised.

The main changes compared to the previous edition are as follows:

— 5.4 has been restructured;

— 5.5 has been added;

— additional information on label design has been added in 7.1;

— a new Figure E.7 has been added and succeeding figures have been renumbered accordingly;

— E.3 has been added;

— Figures E.11, E.12, and E.13 have been added;

— Tables E.1 and E.2 have been added.

© ISO 2017 – All rights reserved

Introduction

The use of electronic data interchange (EDI) in association with the physical transport and handling of packages and when traceability is appropriate, such as that described in ISO 9000, requires a clear and unique identifier linking the electronic data and the transport unit.

Bar code-marked transport labels are in widespread use in global industries. Several different standards exist, each designed to meet the requirements of the specific industry sector. For effective and economic use within and between industry sectors, one common multi-industry standard is a necessity.

A bar code-marked transport label is designed to facilitate the automation of shipping and handling of administrative operations. The bar code information on the transport label may be used as a key to access the appropriate database that contains detailed information about the transport unit, including information transmitted using EDI. In addition, a transport label may contain other information as agreed between the trading partners.

Two-dimensional symbols may be included to assist in moving large amounts of shipping label or EDI data from sender to recipient and to assist the transportation carrier automated sortation and tracking systems.

This document incorporates the technology, data structure and conformance standards of ISO/IEC JTC 1/SC 31 with the user requirements for shipping labels into a single application standard.

While this document provides an international shipping label standard, ISO 22742 provides guidance for product packaging. This document and ISO 22742 are complementary.

On the other hand, ISO 17365 covers the use of RF tags on shipping/transport units and was prepared by ISO/TC 122.

© ISO 2017 – All rights reserved

Packaging — Bar code and two-dimensional symbols for shipping, transport and receiving labels

1 Scope

This document:

— specifies the minimum requirements for the design of labels containing linear bar code and two-dimensional symbols on transport units to convey data between trading partners;

— provides for traceability of transported units using a unique transport unit identifier (licence plate);

— provides guidance on the formatting on the label of data presented in linear bar code, two-dimensional symbol or human-readable form;

— provides specific recommendations regarding the choice of bar code symbologies, and specifies quality requirements;

— provides recommendations as to label placement, size and the inclusion of free text and any appropriate graphics;

— provides guidance on the selection of the label material.

This document is not applicable to the direct printing on to kraft coloured corrugated surfaces.

NOTE Guidance on the direct printing of bar code symbols on to kraft coloured corrugated surfaces are provided in references such as *The Fibre Box Handbook*[10].

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 15415, *Information technology — Automatic identification and data capture techniques — Bar code symbol print quality test specification — Two-dimensional symbols*

ISO/IEC 15416, *Automatic identification and data capture techniques — Bar code print quality test specification — Linear symbols*

ISO/IEC 15417, *Information technology — Automatic identification and data capture techniques — Code 128 bar code symbology specification*

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

ISO/IEC 15438:2015, *Information technology — Automatic identification and data capture techniques — PDF417 bar code symbology specification*

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 16023:2000, *Information technology — International symbology specification — MaxiCode*

© ISO 2017 – All rights reserved

ISO/IEC 16388, *Information technology — Automatic identification and data capture techniques — Code 39 bar code symbology specification*

ISO/IEC 18004, *Information technology — Automatic identification and data capture techniques — QR Code bar code symbology specification*

ISO/IEC 19762, *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary*

ISO 17365, *Supply chain applications of RFID — Transport units*

ISO 21067, *Packaging — Vocabulary*

ANSI MH10.8.2, *Data Identifier and Application Identifier Standard*

GS1 General Specifications.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 19762 and ISO 21067 apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

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

4 Concepts

4.1 Principles

The purpose of a bar code label is to facilitate the automatic exchange of data among all members within a channel of distribution, i.e., supplier, carrier, purchaser and other intermediaries. The amount of data, in linear bar code, two-dimensional symbols and in human-readable form, is dependent on the requirements of the trading partners. Where a bar code label is used in conjunction with electronic databases and/or electronic data interchange (EDI) systems, the amount of data may be significantly reduced and may consist of only one piece of data, the unique identifier for the transport unit. If radio frequency identification (RFID)-enabled labels or tags are used in conjunction with labels in conformance with this document, ISO 17365 shall be used for RFID usage with transport units. Human and optically readable data for the representation of RFID applications should be in accordance with ISO/IEC/TR 24729-1.

Trading partners have different information requirements. Some information may be common to two or more trading partners, while other information may be specific to a single trading partner. Information for various trading partners becomes available at different times, for instance:

— product-specific information at the point of manufacture or packaging;

— order processing information at the time of processing the order;

— transport information at the time of shipment.

Trading partners may find it necessary to include significant data elements dealing with the above that may be presented both in linear bar code and two-dimensional symbols (see Annexes A and B) and human-readable form.

This document shall be used in conjunction with application guidelines defining the parameters chosen by the trading partners concerned. Annex D gives guidance in the definition of these parameters.

© ISO 2017 – All rights reserved