

APPLICATION		REVISION			
NEXT ASSY	USED ON	LTR	DESCRIPTION	DATE	APPROVAL
-	-	-	SEE EC9385-001		
		A	SEE EC9408-001 TV/DB	05/08/08	H. PATEL
		B	SEE EC9423-001 DB/DB	05/16/08	H. PATEL

- This specification prepared in accordance with USPS-STD-11.

THE INFORMATION CONTAINED ON THIS DOCUMENT IS THE CONFIDENTIAL PROPERTY OF THE UNITED STATES POSTAL SERVICE AND SHALL NOT BE COPIED OR REPRODUCED IN ANY MANNER OR DISCLOSED TO THIRD PARTIES WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE UNITED STATES POSTAL SERVICE AND SHALL NOT BE USED FOR ANY PURPOSE WHATSOEVER, INCLUDING THE MANUFACTURE OF THE PRODUCT DISCLOSED, FOR ANYONE OTHER THAN THE UNITED STATES POSTAL SERVICE.

UNITED STATES POSTAL SERVICE SPECIFICATION

SIGNATURE		DATE	 UNITED STATES POSTAL SERVICE® BARCODE, CONTAINER, INTELLIGENT MAIL®		
REVIEWED BY	W. Barcheck	04/10/08			
CHECKED BY	H. Patel	04/11/08			
APPROVED BY	D. Boller	04/11/08			
PROJECT ENGINEER	H. Patel	04/11/08			
NOT TO BE USED FOR MANUFACTURE UNLESS APPROVED FOR THE U.S. POSTAL SERVICE					
FOR THE UNITED STATES POSTAL SERVICE Steve Dearing		04/11/08	Cage No. 27085	USPS-B-3215	SHEET 1 OF 12

1. SCOPE

1.1 Scope – This document provides specifications for printing the USPS Intelligent Mail® Container barcode (IM™ Container barcode). The Intelligent Mail Container barcode is used on mailer-generated pallet labels to uniquely identify pallets and similar containers (i.e. All Purpose Containers, hampers, pallet boxes, etc.) in addition to identifying the mail owner.

1.2 Background –The IM™ Container barcode uniquely identifies the mail owner, mail preparer, or consolidator by way of the Mailer ID field. Furthermore, the IM Container barcode establishes a unique “serial number” for each container. These two features allow each container to be associated with a unique mailing and facilitate tracking of containers as they are loaded and unloaded from transportation. The IM Container barcode will be applied to Mailer-generated pallet labels and is designed to be scanned at acceptance and at other points throughout the transportation and processing network. Other human-readable data elements, beyond the IM Container barcode, such as text identifying the mail owner, destination, and type of mail are also required on the container placard. Further information on the container placard can be found in the *Mailing Standards of the United States Postal Service, Domestic Mail Manual (DMM 300)*.

1.3 Classification – The IM Container Barcode shall consist of a 21-character data string encoded in a barcode that generally follows the GS1-128 specification; however, USPS has many unique operational requirements and has deviated from the GS1 specification where necessary as identified in this document. GS1-128 barcodes, formally known as UCC/EAN-128, are a special type of Code 128 (ISO/IEC 15417) barcodes, which make use of Application Identifiers (AIs) that define what the encoded data is for and how it is to be used.

1.4 Use of the Technical Specification – This specification provides all the necessary information to generate Postal Service-compliant IM Container barcode. Within the context of this document the use of the term *container* refers to the unit load (pallet, container, or rolling stock). This specification has been divided into logical categories to simplify its use. Sections 3.1 through 3.6 provide the technical requirements of the barcode. The *Mailing Standards of the United States Postal Service, Domestic Mail Manual (DMM 300)* provides the official guidelines on the mailing standards associated with the use and production of barcoded container labels presented by mailers. However, this technical specification shall be the basis for all other technical guidance on IM Container barcodes.

2. APPLICABLE DOCUMENTS

2.1 Government Documents – The following documents form part of this specification to the extent specified herein.

MANUALS

United States Postal Service

DMM 300	Mailing Standards of the United States Postal Service, Domestic Mail Manual
1056370	Label, Container, Intelligent Mail

(Copies of the DMM or drawings may be obtained from the Superintendent of Documents, U.S. Government Printing Office, 732 N Capitol St., NW, Washington DC 20401-0003 or at their website at www.gpoaccess.gov ; and or available on Postal Explorer at website <http://pe.usps.gov>).

2.2 Non-Government Documents – The following documents of the most current issue available form a part of this specification to the extent specified herein.

SPECIFICATIONS

Global Standards (GS)

GS1	General Specifications
GS1-128	Symbology Specification - Code 128

(Copies of GS1 documents may be obtained from the Global Office Address at: Princeton Pike Corporate Center, 1009 Lenox Drive, Suite 202, Lawrenceville, New Jersey, 08648 or by visiting their website at www.gs1.org).

American National Standards Institute (ANSI)

ISO/IEC 15417	Information Technology – Automatic Identification and Data Capture Techniques – Barcode Symbology Specification – Code 128
ISO/IEC 15416	Information Technology – Automatic Identification and Data Capture Techniques – Barcode Print Quality Test Specification – Linear Symbols (formerly INCITS 182)

(Copies of ANSI documents may be obtained by writing to Global Engineering Documents, Attn: Customer Service Department, 15 Inverness Way East, Englewood,

CO 80112, or by visiting their web site at <http://global.ihc.com>; requests for permission to reproduce ISO documentation should be addressed to ISO at the following address or to ISO's member body in the country of the requestor: Copyright Manager, ISO Central Secretariat, 1 rue de Varembé, Case postale 56, CH-1211 Geneva 20, Switzerland, or by visiting their web site at http://www.iso.org/iso/publications_and_e-products.htm for more information)

2.3 Order of Precedence – In the event of conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Printer Resolution – A printer with a minimum dpi of 203 is required for printing the IM Container barcode. Dots per inch (dpi) is a measure of printing resolution, in particular the number of individual dots that can be produced within a linear one-inch (2.54 cm) space.

3.2 Reflectance / Symbol Contrast – The substrate on which the barcode will be printed shall be uniform in color. Barcode scanning equipment responds to the difference between light reflected from the darkest bar and the lightest space within the barcode symbol, including the quiet zones. Reflectance shall be measured with a Postal Service-specified reflectance meter or barcode verifier.

3.2.1 Minimum/ Maximum Reflectance - The reflectance value of the darkest bar within the bar code symbol (R_{min}) must be equal to or less than half the reflectance value of the lightest space (R_{max}), when measured in the red spectral range between 630 nanometers (nm) and 675 nm.

$$R_{min} \leq 0.5R_{max}$$

3.2.2 Symbol Contrast - Symbol contrast is the difference between the highest reflectance value (R_{max}) and the lowest reflectance value (R_{min}) within the barcode symbol, including the quiet zones. The symbol contrast shall be greater than 40 percent.

$$SC = R_{max} - R_{min} \geq 40\%$$

3.3 Barcode Technical Requirements

3.3.1 Barcode Symbology – The IM Container Barcode shall consist of a 21-character data string encoded in a barcode that generally follows the GS1-128 specification; however, USPS has many unique operational requirements and has deviated from the GS1-128 specification where necessary as identified in this document. These barcodes shall conform to one of the approved barcode constructs defined in Section 3.6 of this document. Only subsets B and C are permitted for this application. Unless otherwise specified, GS1 system rules for encoding/decoding element strings in GS1-128 barcode symbols shall be abided by.

Note: *Subset C allows for more efficient encoding of numeric values (i.e. can shorten the overall barcode length) than Subset B; however, Subset C does not support encoding of alpha characters. Subset B allows for encoding of numeric values and also supports the encoding of both “upper” and “lower” case alpha characters. Special shift characters must be used to toggle between subsets. Some commercial barcode applications may have automatic subset-selection functionality designed to construct the most compressed (i.e. shortest length) barcode. Care should be taken to ensure that Subset A is not inadvertently used. Additionally, customers are cautioned to encode alpha characters in the same case as provided to the USPS in any other medium (physical or electronic) (e.g. Mail.dat file).*

3.3.2 X-Dimension - The width of the narrowest bar or space element within the barcode symbol is defined as the X-dimension. The X-dimension shall remain constant throughout the barcode symbol. The barcode shall be printed with an X-dimension that shall measure between 0.0225 inch (22.5 mils) and 0.0275 inch (27.5 mils).

3.3.3 Barcode Length - The overall length of the barcode, measured from the leading edge of the first bar to the trailing edge of the last bar, shall not exceed 7.25 inches. An overall barcode length between 6.25 and 7.25 inches is recommended.

3.3.4 Barcode Height - The overall height of the barcode shall measure between 0.75 inch (minimum) and 1.1 inches (maximum).

3.3.5 Horizontal Barcode Quiet (Clear Zone) - A clear zone measuring at least 10 times the X-dimension shall be maintained immediately to the left and right of the barcode. No text, images, or other markings shall appear in this area.

3.3.6 Vertical Barcode Quiet (Clear Zone) - A clear zone measuring at least 0.125 inch shall be maintained directly above and below the barcode. No text, images, or other markings shall appear in this area.

3.3.7 Barcode Quality - At least 70 percent of the barcodes in each mailing shall have an overall symbol grade of “B” or better when measured with the appropriate aperture size in the red spectral range between 630 nanometers (nm) and 675 nm. The remainder can measure no less than a Symbol Grade of “C”. Specified symbol grades are based upon the ISO/IEC 15416 Barcode Print Quality Guideline (formerly INCITS 182) which recommends a method of measuring the quality parameters of printed barcode symbols.

The different symbol grades indicate print quality. Only the use of the appropriate aperture for the X-dimension of the barcode symbol under consideration will guarantee that the grade obtained from measurement of this symbol is the correct grade according to the ISO/IEC 15416 specified methodology. Therefore, in accordance with this methodology, a 10 mil aperture (0.250 mm) shall be used when measuring barcodes printed with X-dimensions between 13 and 25 mils and a 20 mil (0.5 mm) aperture shall be used when measuring barcodes printed with an X-dimension of 25 mils or greater.

3.3.8 Human-Readable (HR) Representation of the Encoded Barcode Data - The human readable interpretation of the data characters represented in the barcode shall be displayed.

3.3.8.1 HR Placement - The human-readable representation of the barcode shall be displayed centered at least 0.125 inch but no more than 0.25 inch below the barcode.

Note: *To enhance readability, the human readable representation of the barcode data shall be “parsed” or separated by data fields. Two blank character spaces shall be left between each field.*

3.3.8.2 HR Printed Text - The text shall be printed in a boldface sans serif font and shall be in at least 12-point type. The human readable text shall not exceed the length of the barcode.

3.4 Barcode Identification - The USPS banner and Identification bars defined below are required elements of the IM Container barcode structure. These indicators shall serve as a guide in distinguishing the IM Container barcode from other information on the Container Label (drawing no 1056370).

3.4.1 USPS Banner - The phrase “USPS SCAN REQUIRED” shall be printed in all uppercase letters centered above the barcode and embedded within the upper Identification Bar as defined in 3.4.2. A clear zone of at least 0.125 inch, but not more than 0.5 inch shall be maintained between the bottom edge of this text and the top of the barcode. The banner shall be printed in a boldface sans serif font and shall be in at least 14-point type.

3.4.2 Identification Bars – Horizontal black lines at least 0.10 inch thick shall be printed above and below barcode. The lines shall, at a minimum, extend the length of the barcode. The upper bar shall be printed at least 0.125 inch above the top edge of the barcode. The line shall have a void in the middle sufficient to allow for unobscured reading of the USPS banner. The lower bar shall be printed at least 0.125 inch below the human-readable representation of the barcode data string.

3.5 Barcode Location - The barcode along with the corresponding USPS banner and Identification bars as specified above shall be printed on the front side of the mailer pallet label, as shown on drawing number 1056370. When the Identification Bars extend beyond the length of the barcode, the barcode shall be horizontally centered.

3.6 Barcode Data Content – Barcodes must encode 21 characters conforming to one of the approved barcode constructs defined below.

Two distinct data constructs are permitted. Both formats are 21-characters in length and will require mailers to encode their respective USPS-assigned 6- or 9-digit Mailer ID. The length of the mailer’s Mailer ID (6 or 9 digits) will dictate which format to follow.

Appendix A depicts an example of an IM™ Container barcode using a 6-digit Mailer ID. Mailers should contact their respective USPS account representative or the *PostalOne!* helpdesk at (800) 522-9085, if they have not yet been assigned a Mailer ID or have other questions about the assignment and implementation of Mailer IDs.

Table I: 6-digit Mailer ID Barcode Format

6-digit Mailer ID Format					
Field No.	Field Description	Field Size	Character Position	Logical Values	Allowable Values
1	Application Identifier	2	1-2	Numeric	“99” (Only)
2	Type Indicator	1	3	Alpha	“M” (Only)
3	Mailer ID	6	4-9	Numeric	USPS-assigned ID with the leading digit ranging from “0” through “8”
4	Serial Number	12	10-21	Alphanumeric	Mailer-defined ⁽¹⁾

⁽¹⁾ **NOTE:** If the value in the fixed length Serial Number field is less than the required 12 characters, it shall be padded with either leading zeros OR leading dashes (“-”, ASCII value 0045); however, leading zeros are recommended. For example, if the mailer opts for a container identifier of “123456”, a value of “000000123456” OR “-----123456” shall be encoded.

Table II: 9-digit Mailer ID Barcode Format

9-digit Mailer ID Format					
Field No.	Field Description	Field Size	Character Position	Logical Values	Allowable Values
1	Application Identifier	2	1-2	Numeric	“99” (Only)
2	Type Indicator	1	3	Alpha	“M” (Only)
3	Mailer ID	9	4-12	Numeric	USPS-assigned ID with the leading digit being “9”
4	Serial Number	9	13-21	Alphanumeric	Mailer- defined ⁽²⁾

⁽²⁾ **NOTE:** If the value in the fixed length Serial Number Field is less than the required 9 characters, it shall be padded with either leading zeros OR leading dashes (“-”, ASCII value 0045); however, leading zeros are recommended. For example, if the mailer opts for a container identifier of “123456”, a value of “000123456” OR “---123456” shall be encoded.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection – The label printing entity is responsible for maintaining the overall quality of the labels they produce. It is highly recommended that periodic inspection and testing of IM container barcodes be undertaken by the label printing entity.

At least 70 percent of the barcodes in each mailing shall have an overall symbol grade of “B” or better when measured with the appropriate aperture size in the red spectral range between 630 nanometers (nm) and 675 nm. The remainder can measure no less than a Symbol Grade of “C”. Specified symbol grades are based upon the ISO/IEC 15416 Barcode Print Quality Guideline (formerly INCITS 182) which recommends a method of measuring the quality parameters of printed bar code symbols.

The different symbol grades indicate print quality. Only the use of the appropriate aperture for the X-dimension of the barcode symbol under consideration, will guarantee that the grade obtained from measurement of this symbol, is the correct grade according to the ISO/IEC 15416 specified methodology. Therefore, in accordance with this methodology, a 10 mil aperture (0.250 mm) shall be used when measuring barcodes printed with X-dimensions between 13 and 25 mils and a 20 mil (0.5 mm) aperture shall be used when measuring barcodes printed with an X-dimension of 25 mils or greater.

5. PREPARATION FOR DELIVERY

This section is not applicable to this specification

6. NOTES

6.1 Intended Use – This document shall be used by the Postal Service and approved vendors for manufacturing systems that will produce, read, decode, and/or transmit IM Container barcode information for automated processing.

6.2 Additional Information – Any questions or concerns may be addressed to:

IM CONTAINER BARCODE PROGRAM MANAGER
INTELLIGENT MAIL PLANNING AND STANDARDS
INTELLIGENT MAIL AND ADDRESS QUALITY
8403 LEE HIGHWAY
MERRIFIELD, VA 22082-8101
Tel.: (703) 280-7498

APPENDIX A

LABEL EXAMPLE

10. SCOPE

10.1 Intended Use – This appendix is not a mandatory part of the specification. The information contained herein is intended for guidance only.

20. APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

30. REQUIREMENTS

30.1 6-digit Mailer ID Container Barcode Example

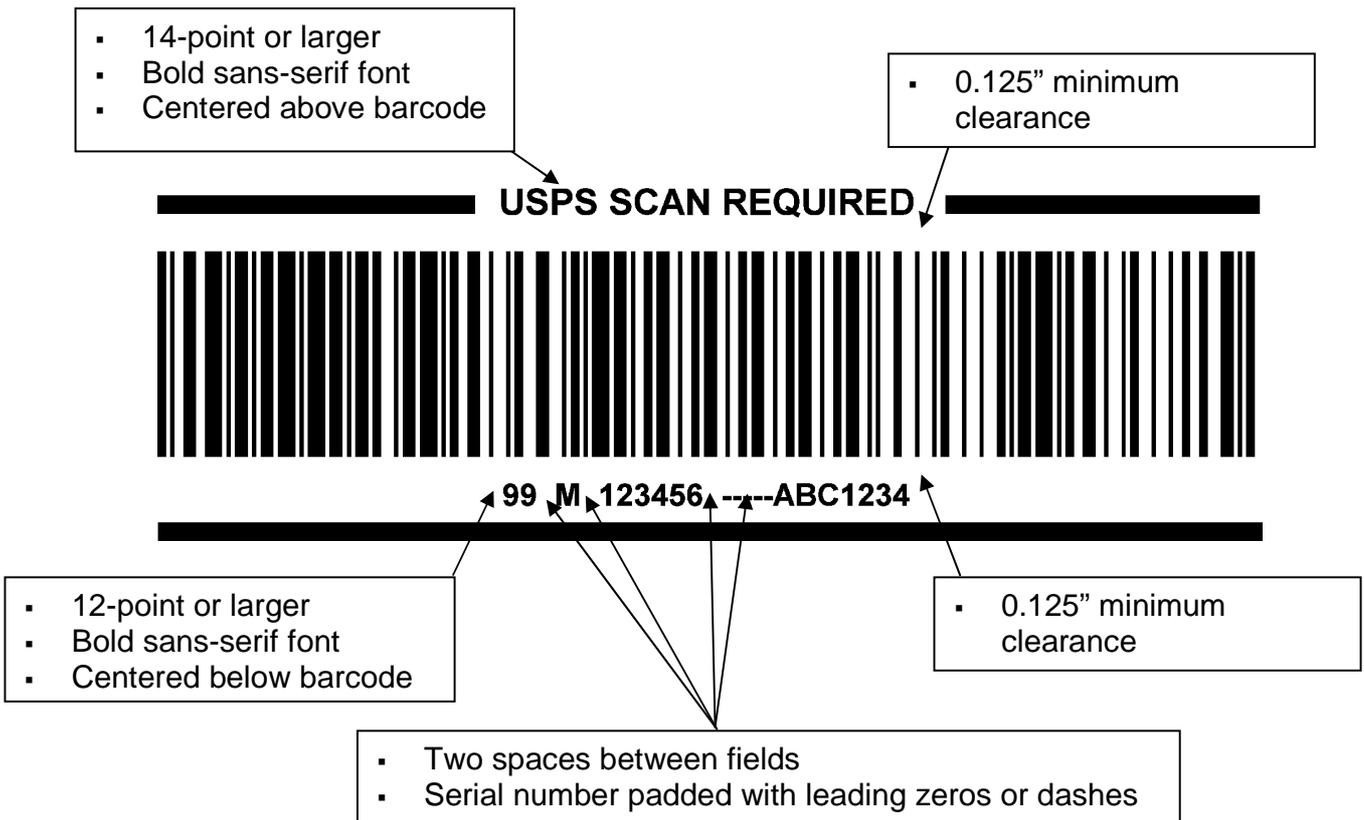


Figure 1 - Intelligent Mail Container Barcode (shown using a 6-digit Mailer ID)

NOTE: This diagram is not intended to be used as a basis for measurement.

APPENDIX B

GLOSSARY

Aperture	Measure of the size of the beam which reads the barcode
Element String	A piece of data defined in structure and meaning, comprising an identification part (prefix or Application Identifier) and a data part, represented in GS1 System endorsed data carrier
Function 1 Symbol Character (FNC1)	A symbology character used in some GS1 data carriers for specific purposes.
GS1	GS1 is a global organization dedicated to the design and implementation of global standards and solutions to improve the efficiency and visibility of supply and demand chains globally and across multiple sectors.
GS1 Application Identifier	The field of two or more characters at the beginning of an Element String that uniquely defines its format and meaning
GS1 General Specifications	Defines the GS1 System data and application standards related to the marking and automatic identification of trade items, locations, logistic units, assets, and more using bar code, RFID, and GS1 Identification Keys.
GS1-128 Bar Code Symbology	A subset of the more general Code 128 that is utilized exclusively for GS1 System data structures.
Human-Readable Interpretation	Characters that can be read by persons, such as letters and numbers, as opposed to symbol characters within bar code symbols, which are read by machines
Identification Number	A numeric or alphanumeric field intended to enable the recognition of one entity versus another.
ISO/IEC	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.
Mailer ID	The Mailer ID field is a unique six- or nine-digit U. S. Postal Service assigned number used to identify each mailer.
Quiet Zone	A clear space with no encoded information that precedes the

	Start Character of a barcode and follows the Stop Character. Formerly referred to as “Clear Area” or “Light Margin”.
R_{\max}	Highest reflectance value, normally the reflectance value of the lightest space within the barcode symbol, including the quiet zones.
R_{\min}	Lowest reflectance value, normally the reflectance value of the darkest bar within the barcode symbol, including the quiet zones.
SC	Difference between the highest reflectance value and the lowest reflectance value anywhere in the scan reflectance profile, including the quiet zones.
X-dimension	The width of the narrowest bar or space element within the barcode symbol is defined as the X-dimension. The X-dimension is normally expressed in “mils” which corresponds to one thousandths of an inch (i.e. 0.001”).

APPENDIX C

ACRONYMS AND ABBREVIATIONS

AIM	Automatic Identification Manufacturers
Als	Application Identifiers
ANSI	American National Standards Institute
DMM	<i>The Mailing Standards of the United States Postal Service, Domestic Mail Manual (DMM 300)</i>
IM™	Intelligent Mail®
ISO/IEC	The International Organization for Standardization and the International Electrotechnical Commission
MPE	mail processing equipment
R _{max}	Reflectance maximum
R _{min}	Reflectance minimum
SC	Symbol Contrast
SN	serial number
USPS	United States Postal Service