THE HOME DEPOT

Barcode Specifications

Carton and Shipment Barcode Identification

April 2017

Contents

1 INTRODUCTION

1.1 Purpose

The purpose of this specification is to provide technical information that will address the product, case and shipment identification needs of THD supply chain. This document is consistent with all global identification standards (see GS1, ANSI, & ISO/IEC reference documents in Appendix B), and defines the required for symbology(s),data structure, dimensions, and print quality, as well as specific barcode placement for each applicable level of labeling applications used in THD supply chain.

This specification is intended to be the reference document for all barcoding applications throughout the entire THD organization, and covers item, case marking, and shipping labels. Home Depot's specification are based on and aligned with the GS1 global identification and barcoding standards. Adhering to these global standards ensures efficient and accurate data capture for all Home Depot scanning environments.

1.2 Methods to Print Barcode Symbols

There are various ways barcodes can be incorporated items, packaging and labels. Barcode dimension and print quality constraints are based on the particular print methodology used.

For direct printing on package products and large volume label printing, wet ink processes are commonly used by dedicated printing companies. These processes typically involve precise digital barcode artwork and printing plates. Traditional printers are normally accustomed to quality control processes and have barcode verification equipment to evaluate printed samples. On-demand printing, using thermal or laser printers, is commonly used for in-house printing of logistic and variable small quantity product labels. Companies choosing to print labels in-house must recognize the necessity to establish quality control measures to ensure their provided barcodes meet Home Depot requirements.

Home Depot follows the GS1 General Specification methodology based on the ISO/ANSI standards for evaluating printed barcode symbols. The GS1 Specifications provide the standardized process for accessing barcode symbol quality and also establishes the thresholds based on barcode language, printing methodology and scanning environment.

2 GS1 DATA STRUCTURES

The Home Depot barcode requirements are based on standards published by the GS1. The GS1 Organization is responsible for the establishment and implementation of global commerce standards for markings and communication.

2.1 GTIN Identification

GTIN describes a family of GS1 global data structures that employ 14 digits and can be encoded into various types of data carriers (i.e. bar codes). The GTIN uniquely identifies an item or carton based on a global standard which spans across all business sectors. GTIN identification includes individual items as well as all other packaging configurations.

Resources of Information:

- GS1 GTIN Allocation Rules
- www.GTIN.info

2.2 Item Identification UPC-A / EAN-13

2.1.1 GTIN-12 and GTIN-13 Data Structure

UPC/EAN barcodes identify a single selling unit and are expected to pass through point of sale systems. UPC codes must be printed black on a white background to ensure maximum readability. If your shipping carton contains more than one selling unit, a UPC code is not applicable & you must use the ITF-14 barcode instead. The product identification string is comprised of three components:

- **U.P.C. Company Prefix** - Vendors must obtain a GS1 Company Prefix directly from GS1 to uniquely identify their company. Typically, GTIN-12s use prefixes from GS1 US and GTIN-13s use prefixes from other global GS1 agencies. Depending on the number of items a company needs to identify, a GS1 Company Prefix may be 7 to 10 digits in length. When used in a GTIN-12, the leading "0" of a GS1 prefix is removed, resulting in a prefix 6 to 9 digits in length.

- **Product Number** - A unique number assigned by the vendor to represent an individual item. The length (number of digits) is determined by the GS1 Company Prefix. In a GTIN-12, a 6-digit prefix will enable a vendor to uniquely identify 100,000 products (00000-99999).

- **Check Digit** - The last digit of the GTIN-12 or GTIN-13 is a calculated check digit. Using a MOD10 check digit algorithm, the calculated check digit prevents substitution errors. An online check digit calculator is available at http://www.barcode-us.com/checkDigitCalculator.html.

2.2 Carton Identification ITF-14

2.2.1 ITF-14/GTIN-14 Data Structure

A GTIN-14 is comprised of four components:

- **Packing Indicator** – This denotes the level of packaging for a particular carton. This one-digit prefix can range from 0 to 8.
- **GS1 Company Prefix** - Vendors must obtain a GS1 Company Prefix directly from GS1 to uniquely identify their company. Depending on the number of items a company needs to identify, a GS1 Company Prefix may be 7 to 10 digits in length.
- **Product Number** – References the same product number used for the item level GTIN (GTIN-12 or GTIN-13) when a carton is made up of the same item. For cartons that contain an assortment of items a new product number is assigned.
- **Check Digit** - The last digit of GTIN-14 is a calculated check digit. Using a MOD10 check digit algorithm, the calculated check digit prevents substitution errors. An online check digit calculator is available at http://www.barcode-us.com/checkDigitCalculator.html.

2.3 SSCC-18 Data Structure

2.3.1 SSCC-18 – Serial Shipping Container Code – Data Structure

The SSCC-18 identifier is used to uniquely identify a pallet or shipping carton and is used in conjunction with the EDI 856 document. An SSCC-18 is comprised of:

- **Application Identifier** - a component of the GS1-128 barcode Symbology. “00” denotes SSCC-18.
- **Extension Digit** - has no defined logic and is meant to increase the capacity of the Serial Reference.
- **GS1 Company Prefix** - the same number used in GTIN identification.
- **Serial Number** - a serialized number uniquely assigned to every pallet label.
- **Check Digit** – should be calculated by labeling or EDI software.

3 BARCODE SYMBOLS

The following table shows the relationship between the GTIN Data Structures and the acceptable barcode formats and locations of use.

GTIN Data Structure	Symbology	Use at Point of Sale
GTIN-12	UPC-A, UPC-E	Yes
GTIN-13	EAN-13	Yes
GTIN-8	EAN-8	Yes
GTIN-14	ITF-14	No

3.1 UPC-A /EAN-13 Item Identification

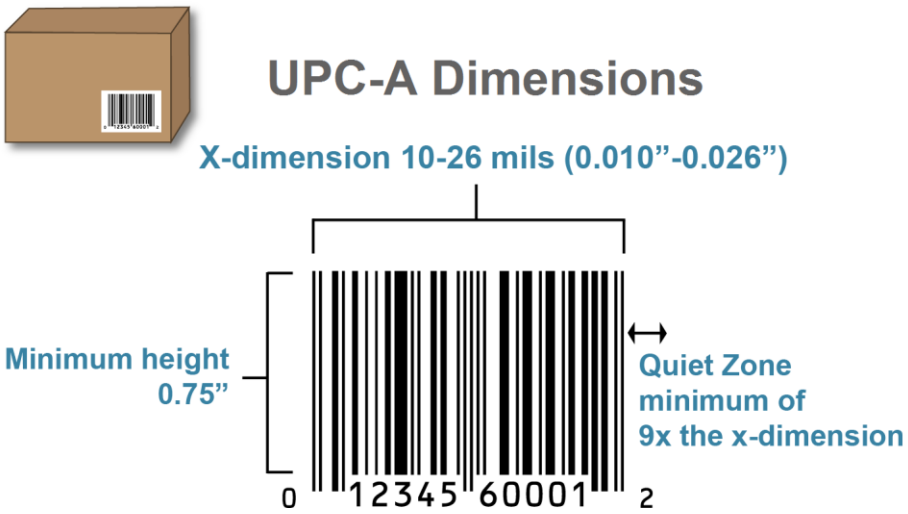
UPC and EAN sizing has two measures, height and width. Height is simply a measure of the bars in the symbol (measuring the shorter interior bars, not the taller guard bars). Width is determined by the "x-dimension" of the symbol. The x-dimension is a measure of the narrowest element of the barcode and affects the overall width of the barcode. In your barcoding software the setting may be referred to as x-dimension, Narrow Bar Width (NBW), Density, or Multiplier. The values will likely be shown in "Mils" (minimum of 10 mils) or in inches (minimum of 0.010").

UPC-A & EAN-13 bar code sizes were previously measured in magnification. These correlate to a nominal (100%) size of 1.469" wide and 1.02" in height, with upper and lower bounds of 80% and 200%. The x-dimension of a 100% size UPC/EAN bar code symbol is .013".

UPC-A Barcodes on Shipping Cartons

In instances where the shipping carton is also the selling carton, the EAN / UPC barcode must be used. The x-dimension of the barcode must be between 10 – 26 mils (80% to 200% magnification). THD does not recommend scaling down a UPC from its nominal size (13 mils, or 100% magnification) and would prefer UPC codes on shipping cartons be as large as practical up to the 26 mils (200%) guideline.

	Home Depot Minimum Req.	GS1 Standard Range
X-dimension	10 - 26 mils (0.010"- 0.026")	19.5 - 26 mils (0.0195"- 0.026")
Quiet Zone	9*x*	9*x*
Total Height	.75"	1.350" – 1.800"
ANSI Print Quality	ANSI "C"	ANSI "C"



3.2 ITF-14 Case Identification

The ITF-14 must be the data carrier used for the GTIN-14 data structure. ITF-14 is a 14 digit bar code that uses the "Interleaved 2 of 5" symbology (I2of5, or ITF).

ITF-14 bar code symbols include bearer bars, which are surrounding bars which protect the bar code image. If the ITF-14 is printed directly on a corrugated carton it must be surrounded by bearer bars. For ITF-14 bar code symbols printed on a label, only horizontal bearer bars along the top and bottom are necessary.

The two components which determine the width of an ITF-14 bar code symbol are the x-dimension and the wide-to-narrow ratio. The x-dimension is a measure of the narrowest element of the barcode and affects the overall width of the barcode. In your barcoding software the setting may be referred to as x-dimension, Narrow Bar Width (NBW), Density, or Multiplier. The values will likely be shown in "Mils" (minimum of 19.5 mils) or in inches (minimum of 0.0195"). The minimum x-dimension varies depending on how the ITF-14 is printed. The other sizing component of an ITF-14, the wide-to-narrow ratio, is a measure of the wide elements to the narrow elements. The wide-to-narrow ratio is held constant and should always be between 2.25:1 to 3:1.

Sizing requirements vary based on how the ITF-14 barcode is printed.

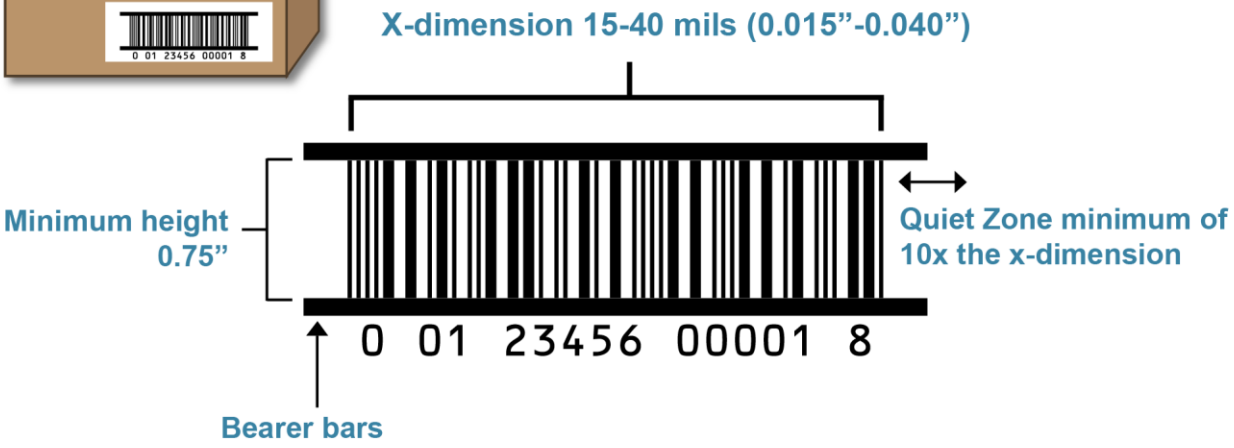
For ITF-14 barcodes printed directly on carton the minimum size requirements are as follows:

	Home Depot Minimum Req.	**GS1 Standard Range**
X-dimension	19.5 - 40 mils (0.0195" - 0.0400")	25 - 40 mils (0.025" - 0.0400")
Wide to Narrow Ratio	2.25:1 - 3.0:1	2.25:1 - 3.0:1
Quiet Zone	10*x*	10*x*
Total Height	1.25	1.25
ANSI Print Quality	ANSI "C"	ANSI "C"

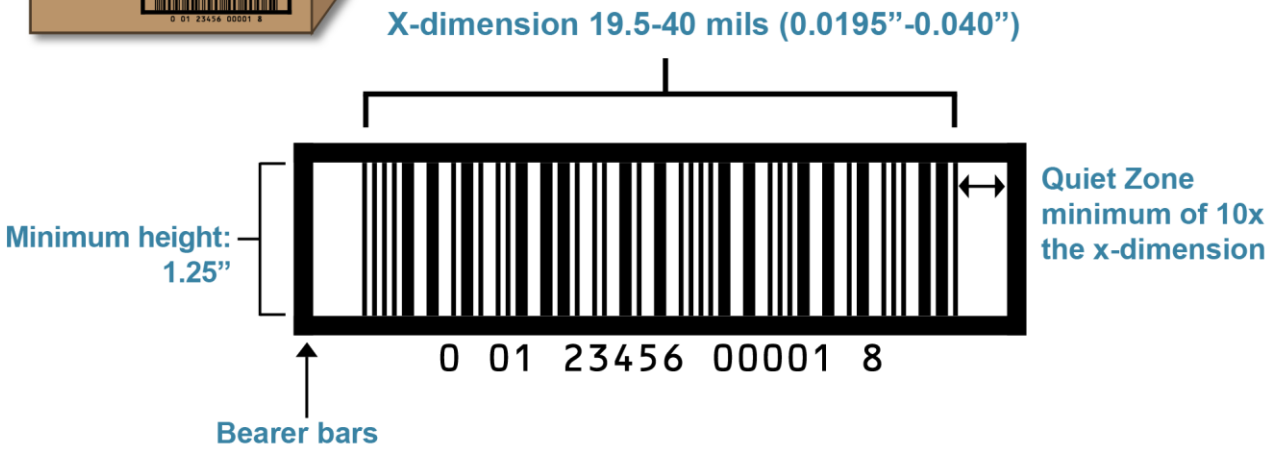
For ITF-14 barcodes printed black on white label the minimum size requirements are as follows:

	Home Depot Minimum Req.	**GS1 Standard Range**
X-dimension	15 - 40 mils (0.0015" – 0.0400")	19.5 - 40 mils (0.0195" - 0.0400")
Wide to Narrow Ratio	2.25:1 - 3.0:1	2.25:1 - 3.0:1
Quiet Zone	10*x*	10*x*
Total Height	0.75"	1.25"
ANSI Print Quality	ANSI "C"	ANSI "C"

ITF-14 Printed on a Label



ITF-14 Printed on Corrugate



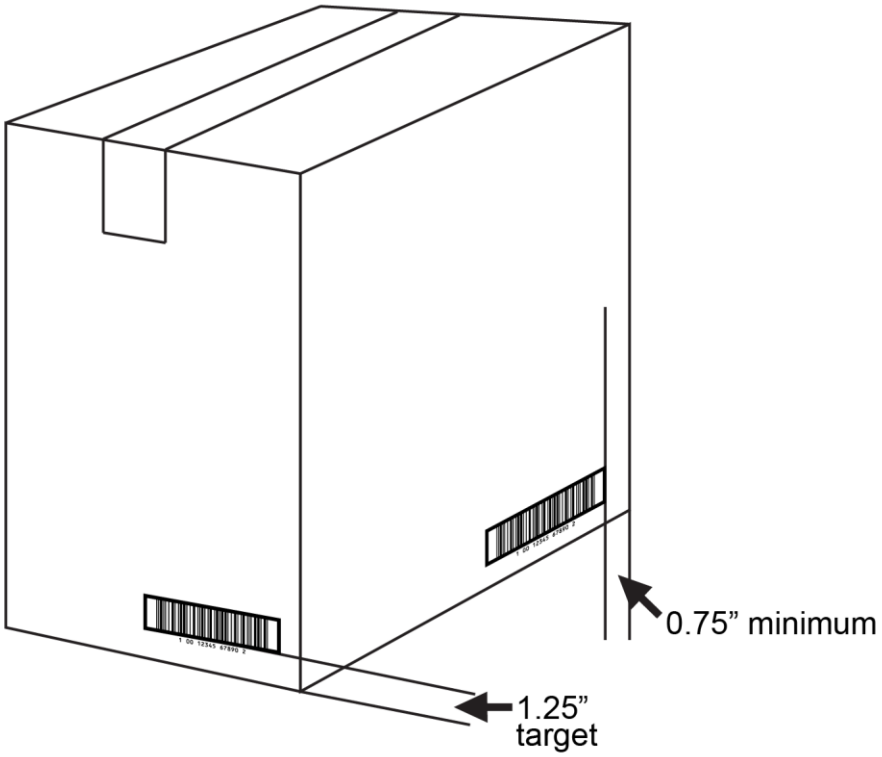
3.3 GTIN Placement

Barcode symbols representing different Home Depot SKU numbers must never be visible on any one item. Although a minimum of one symbol is required, two symbols representing the same item are recommended on trade items for scanning in warehousing or General Distribution Scanning environments.

When the height of the unit is less than 32 millimeters, the symbol may be placed on the top of the package. The symbol should be placed with the bars perpendicular to the shortest side, no closer than 19 millimeters (0.75 inch) from any edge.

Per GS1 rules, it is permissible to have more than one instance of a UPC code representing the same item on a large or bulky item. Unless you are currently embedding electronic security devices near the UPC code at THD direction, THD requires a minimum of two instances on each shipping carton.

If you are currently embedding security devices in your packaging you must only have one instance of a UPC code on your carton.



4 GS1-128 SHIPPING LABEL

4.1 GS1-128 Barcode

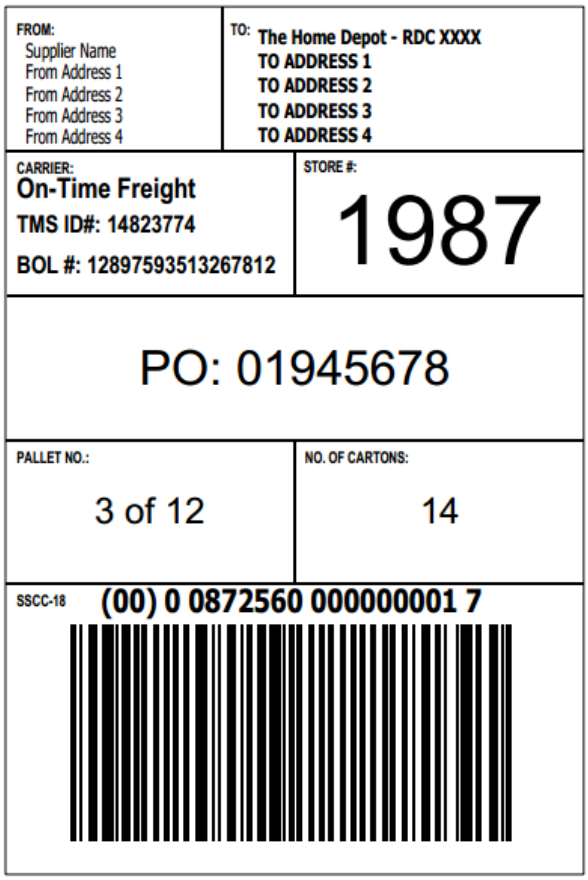
The SSCC-18 barcode on a GS1-128 Shipping Label is encoded as a GS1-128 type barcode. A typical SSCC-18 barcode has the following:

- **Code 128 Start Character "C"** – this is a special coding character different than the letter "C"
- **Code 128 FNC1 character**
- **Application Identifier (AI) "00"**
- **Encoded Data** – 18 digit SSCC-18
- **Symbol Check character** – encoded in symbol but not shown in human readable text. This is different than the Check Digit that is the last digit of the SSCC-18.
- **Stop Character**

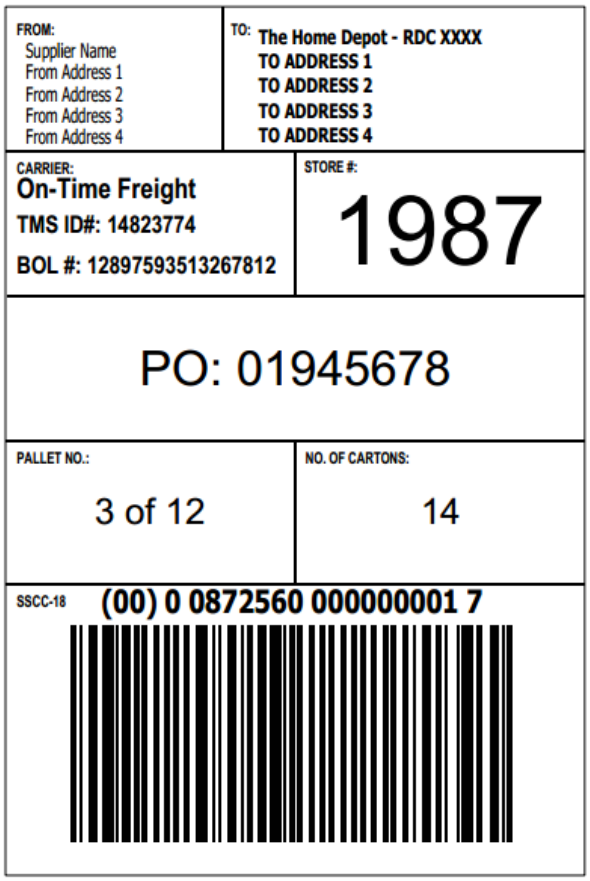
When a scanner reads a GS1-128 bar code, it will look at the first 2-4 digits for the applicable AI. For example, if "00" was the first part of the data string, the scanner would expect an 18-digit numeric **SSCC-18** data to follow.

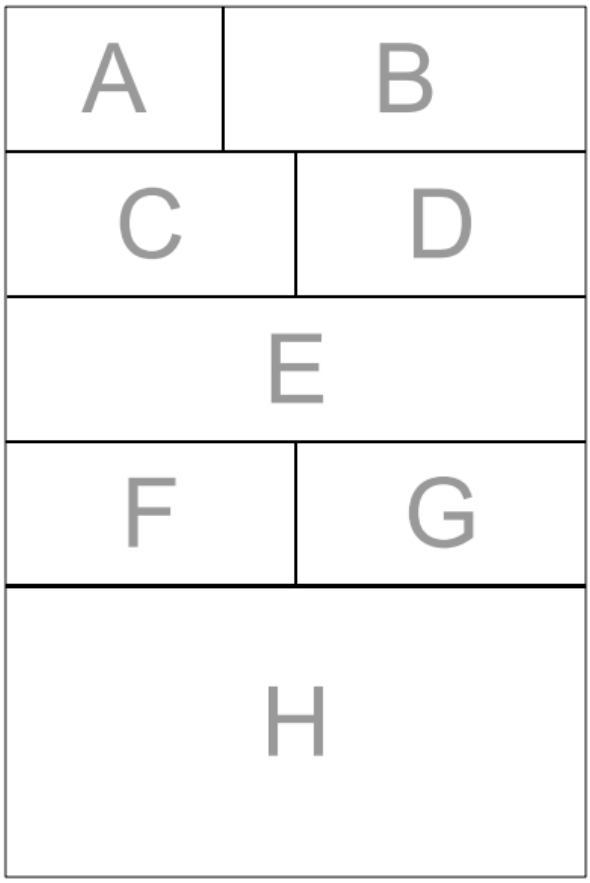
For additional information, please visit www.gs1-128.info.

4.2 GS1-128 Shipping Label formats



4.3 GS1-128 Zone Breakdown





4.4 GS1-128 Zone Specifications

ZONE A	**SHIP FROM**
Title	FROM
Block Height	1.0 inch [25.4 mm]
Block Width	1.5 inch [38.1 mm]
Characteristic	Mandatory
Data Content	Ship From name and address
ZONE B	**SHIP TO**
Title	SHIP TO
Block Height	1.0 inch [25.4 mm]
Block Width	2.5 inch [63.5 mm]
Characteristic	Mandatory
Data Content	Ship To name and address
ZONE C	**CARRIER**
Title	CARRIER
Block Height	1.0 inch [25.4 mm]
Block Width	2.0 inch [50.8 mm]
Characteristic	Mandatory
Data Content	Carrier Name
	TMS ID Number (TMS ID#: xxxxxxxx)
	VICS BOL Number (BOL#: xxxxxxxxxxxxxxxxx)
ZONE D	**STORE NUMBER**
Title	STORE #
Block Height	1.0 inch [25.4 mm]
Block Width	2.0 inch [50.8 mm]
Characteristic	Only used for RDCXD shipments. This zone is not used for RDC agg. shipments.
Data Content	Store #
ZONE E	**PO NUMBER**
Title	PO:
Block Height	1.0 inch [25.4 mm]
Block Width	4.0 inch [101.6 mm]
Characteristic	Mandatory
Data Content	PO#
ZONE F	**PALLET NUMBER**
Title	PALLET NO.
Block Height	1.0 inch [25.4 mm]
Block Width	2.0 inch [50.8 mm]
Characteristic	Mandatory
Data Content	Current pallet of total pallet
ZONE G	**NUMBER OF CARTONS**
Title	NO. OF CARTONS
Block Height	1.0 inch [25.4 mm]
Block Width	2.0 inch [50.8 mm]
Characteristic	Mandatory
Data Content	Number of cartons on current pallet

ZONE H	SERIAL SHIPPING CONTAINER CODE
Title	(None)
Block Height	2.0 inch [50.8 mm]
Block Width	4.0 inch [101.6 mm]
Characteristic	Mandatory
Application Identifier	“00”
Data Content	Serial Shipping Container Code SSCC-18 generated by the shipper. **Note**: Per GS1 Guidelines, an SSCC-18 number shall not be reallocated within one year of the shipment date.
BAR CODE SPECIFICATIONS:	
Bar Code Symbology	GS1-128
Height	1.25 inch [31.75 mm] minimum
X-Dimension	.02 inch - .025 inch [.498 mm - .635]
Quiet Zone	10*x* or 0.25 inch minimum. Each Quiet Zone preceding and following the bar code.
Bar Code Print Quality	Minimum ISO/ANSI grade of “C” with 10 mil aperture

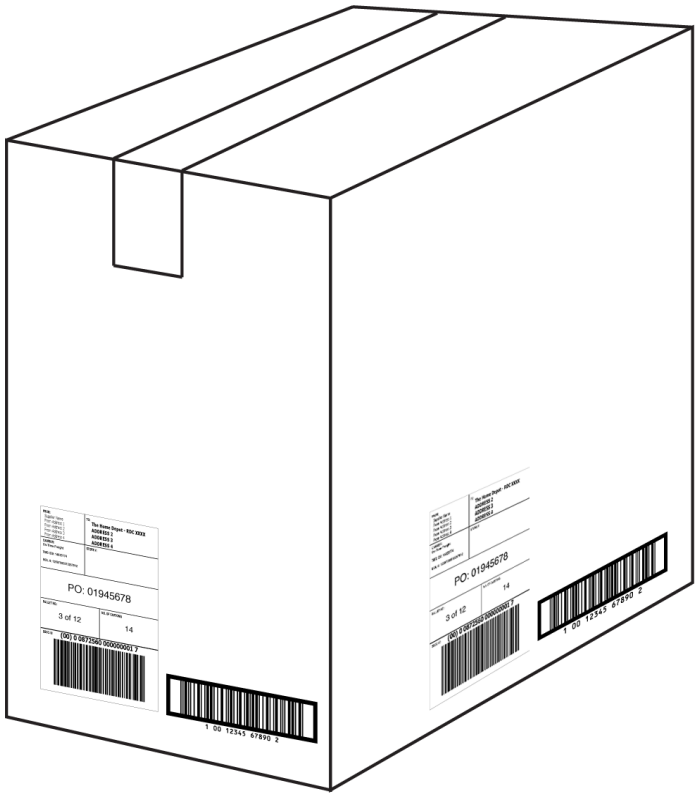
4.5 GS1-128 Label Placement

Label Placement on Pallet

The GS1-128 label should be placed midway up the pallet load on the outside of the shrink-wrap; for pallet loads less than three feet in height, place the label on top of the pallet. The label should face the rear of the trailer.

Label Placement on Boxes

The GS1-128 label should be placed on the long side of the box, not top or bottom. Organize multiple labels fence style (perpendicular to the top and bottom of the box), and unobstructed by packing tape, shrink-wrap or any other label.



APPENDIX A

Label Certification

A.1 Barcode Label Certification

The Home Depot has partnered with Bar Code Graphics Inc. to provide comprehensive bar code certification services to our vendors. Identification Labs, the bar code testing division of Bar Code Graphics Inc., has extensive experience with barcode verification and compliance. All logistic barcodes required by The Home Depot must be verified by Identification Labs.

All THD suppliers are required to submit both GTIN barcodes and GS1-128 shipping labels for certification. Physical test samples are required from all ship point locations. Variations in software, processes, printers, and personnel can impact label formatting and print quality. Certification by ship location demonstrates your company's complete ability to meet the THD logistic bar code requirements.

For details on the barcode label certification process including what is required and how to submit samples to Identification Labs please visit http://homedepot.symboltest.com. A certification fee is required with each sample provided and each THD vendor is responsible for all fees. Bar code certification is mandatory for all new as well as existing vendors.

Any questions regarding bar code certification should be directed to Identification Labs.

800-662-0701 x310
test@barcode-us.com
http://homedepot.symboltest.com

APPENDIX B

B.1 Technical References

GS1 General Specifications

ISO 22742 - Packaging – Linear Barcode and Two-Dimensional Symbols for Product Packaging

ISO/IEC 15416, Information Technology -- Automatic Identification and Data Capture Techniques -- Barcode Print Quality Test Specification -- Linear Symbols

ISO/IEC 15417, Information Technology — International Symbology Specification - Code 128

http://www.gs1-128.info

http://www.gs1.org