

Lucent Technologies
Bell Labs Innovations



PRODUCT PACKAGE LABEL STANDARD

801-001-106

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1. PREFACE

This standard establishes the minimum requirements for machine readable (e.g., bar code) and human readable data contents of labels applied to product packages of Lucent Technologies products. These requirements also apply to product packages delivered to Lucent Technologies facilities and supplement those requirements in packaging specification PKG-91NJ1045. Labels produced in accordance with this document will be in compliance with the Telecommunications Industry Forum (TCIF) guidelines document number BCC/95/003.

2. SCOPE

This standard defines minimum bar code label requirements for identifying Lucent Technologies product packages that are distributed outside their originating location. This standard also defines the minimum requirements for product package labeling for Lucent Technologies suppliers. Intended applications include, but are not limited to, systems that automate the control of product package during production, inventory and distribution.

The term "product package" refers to the first container, tied or wrapped, of a single product or quantity thereof, that constitutes a complete identifiable package. A product package may contain an item packaged singularly, multiple quantities of the same item packaged together or a group of parts packaged together (e.g., component tray, reel or kit).

In this document, the word "shall" indicates a requirement and the word "should" indicates a recommendation.

3. DEFINITIONS

See Appendix A.

4. FORMAT

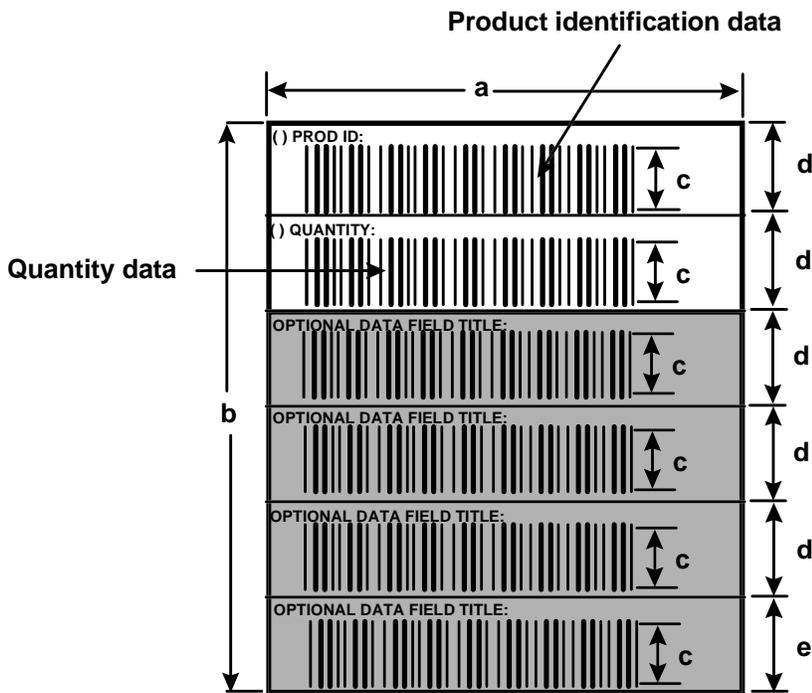
Figure 1 illustrates a recommended bar code label format that accommodates both mandatory and optional data fields in a format that is similar to the 801-001-105 Shipping Label format. The recommended minimum label size to accommodate the mandatory data fields is 3.0 inches (76 mm) wide by 1.6 inches (41 mm) high. This minimum size is within the specified range of sizes as documented in the Telecommunications Industry Forum (TCIF) guidelines document number BCC/95/003. The maximum size of the label is undefined and is dependent upon the business needs. Optional data fields may be added to the label which will increase the label height. Note the acceptable use of the double high *Special* data field.

The maximum label width is 5.0 inches (127 mm). The label width is dependent on the choice of the bar code symbology and bar code density, (See Table 1 for Code 39 symbology). The bar code symbology and density shall be mutually agreed upon by the supplier/manufacturer and the customer.

4.1 DATA FIELDS

Each data field should be separated by thin border lines (See Figure 1) and shall contain its appropriate field title. Field titles are not required when a data field does not contain a bar code symbol. Outer border lines are not required.

Figure 1 - Recommended Label Format



Shaded area represents optional data fields included in label format

	Minimum	Maximum
a	3.0 (76 mm)	5.0 (127 mm)
b	1.6 (40.6 mm)	(Note 1)
c (Note 2)	0.375 (10 mm)	0.7 (18 mm)
d	0.8 (20.3 mm)	1.0 (25.4 mm)
e	0.8 (20.3 mm)	2.0 (50.8 mm)

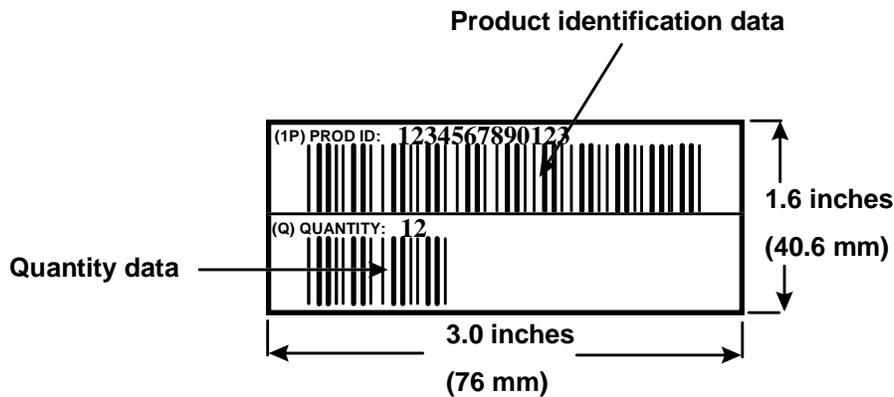
Dimensions are in inches (mm)

Note 1: While the minimum height of the label is equal to the height of the two mandatory data fields, the maximum height of the label is undefined. It is dependent upon the number of optional data fields and the addition of other information on the label as described in Section 4.0.

Note 2: For Code 39 bar code symbols, dimension “c” shall be greater than or equal to 15 % of the length of the bar code

Figure 2 is an example of the minimum size label (3 inches (76mm) by 1.6 inches (40.6 mm)) format containing the two mandatory data fields.

Figure 2 - Example of label format shown with Mandatory Data Fields - 3 inch wide label



Drawing Not to Scale

Note: The product identification bar code data field is shown with the maximum number of data characters encoded in the bar codes as specified in Table 1. This figure assumes 2 characters for the Data Identifier, 13 data characters and 2 start/stop characters for a total of 17 characters as shown in Table 1 for an “X” dimension of 0.01 inch with N = 2.5. The use of less dense bar code symbols will result in fewer characters being able to be encoded in the bar code for the same label width.

Figure 3 is an example of the minimum size label (3 inches (76mm) by 1.6 inches (40.6 mm)) format containing the single U.P.C code and other optional descriptive information.

Figure 3 - Example of label format shown with the Mandatory Data Fields in U.P.C. and additional descriptive information

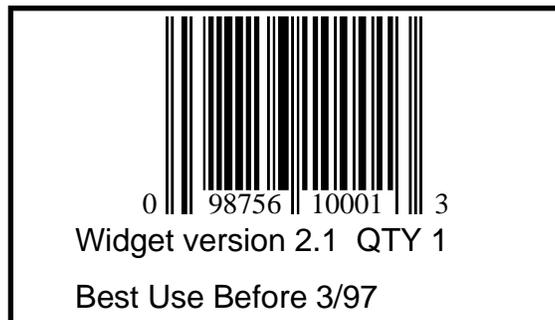
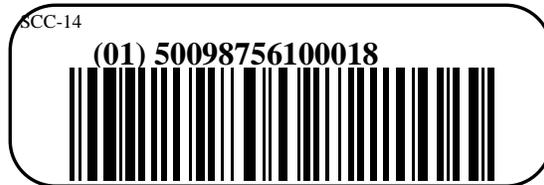


Figure 4 is an example of the use of a single bar code symbol that contains the manufacturer identification, product identification and implied quantity.

Figure 4 - Minimum label format shown using the SCC-14 symbol that contains the U.P.C. code in a single UCC/EAN-128 symbol in accordance with ANSI/UCC-6 Application Standard for Shipping Container Codes standard.



Drawing Not to Scale

Figure 5 is an example of a 5.0 inch (127 mm) wide label format with the mandatory and optional data fields is shown in Figure 3.

Figure 5 - Label format shown with Mandatory and Optional Data Fields - 5 inch wide label



Drawing Not to Scale

Note: The product identification bar code data field is shown with the maximum number of data characters encoded in the bar codes as specified in Table 1. This figure assumes 2 characters for the Data Identifier, 27 data characters and 2 start/stop characters for a total of 31 characters as shown in Table 1 for an “X” dimension of 0.01 inch with N = 2.5. The use of less dense bar code symbols will result in fewer characters being able to be encoded in the bar code for the same label width.

4.1.1 DATA FIELD TITLES

Each data field shall contain the appropriate data field title when a Code 39 or Code 128 bar code symbol is printed in the field. A data field title is optional when a U.P.C. bar code symbol is printed in the field. Data field titles shall be printed with characters of a minimum height of 0.06 inches (1.5 mm). The suggested data field titles for the mandatory and several optional data fields are as follows:

DATA FIELD NAME	BAR CODE SYMBOL	TITLE
Product Identification	Mandatory	PROD ID:
Quantity	Mandatory*	QUANTITY:
Serial Number	Optional	SERIAL NO:
Supplier Identification	Optional	SUPP ID:
Description	Optional**	(As Required)
Special	Optional	(As Required)

* Not required for U.P.C. symbols or when concatenated with product identification in a UCC/EAN-128 symbol.

** Mandatory for packages received at Lucent Technologies facilities.

4.1.2 DATA FIELD IDENTIFIERS

The appropriate *ANSI MH 10.8.2-1995 Data Application Identifier(s)* shall be used with all Code 39 or Code 128 bar code symbols. The Data Identifier or Application Identifier shall immediately follow the start code character of each bar code symbol. A partial list of common Data Identifiers is shown below:

- P** - Customer Product Identification
- 1P** - Supplier Product Identification
- 3P** - Combined manufacturer identification code and item code using the UCC/EAN format
- 7P** - Common Language Equipment Identification code
- Q** - Quantity
- 7Q** - Quantity plus Unit of Measure
- S** - Serial Number
- T** - Traceability Number assigned by the customer
- 1T** - Traceability Number assigned by the mfr/supplier
- 2V** - Mfr/Supplier ID (assigned by Uniform Code Council)
- 6V** - Mfr/Supplier ID (mutually defined)

Note: When UCC/EAN-128 symbology is used, the appropriate application identifier shall be used in accordance with *ANSI/UCC-4 UCC128 Application Identifier Standard* requirements.

4.1.3 MANDATORY DATA FIELDS

The following data fields constitute a minimum requirement.

Product Identification
Quantity *

* Not mandatory when U.P.C. code is used for product identification

4.1.3.1 PRODUCT IDENTIFICATION

The *Product Identification* data field is a mandatory bar code data field. It shall be designated as mutually agreed upon between the Lucent Technologies and the supplier or customer. For most product packages being received at Lucent Technologies facilities, the Product Identification will be required to be the Lucent Technologies assigned COMCODE number. In some instances the supplier assigned U.P.C. code will be appropriate. Contractual agreements will prevail as to how the product package should identify the product.

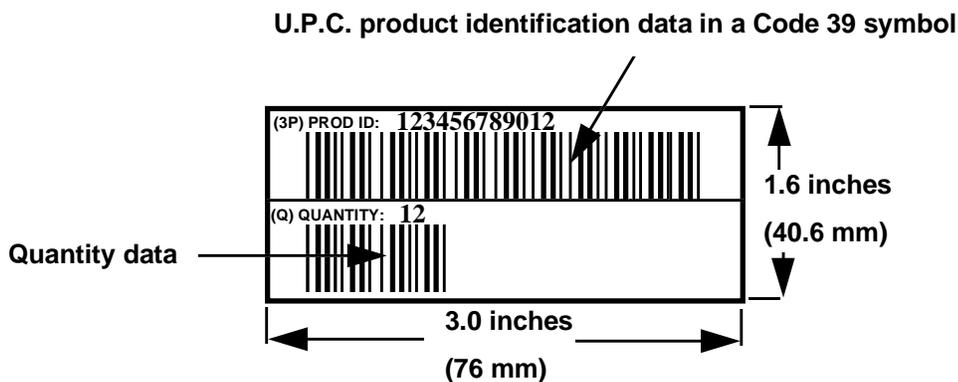
The product identification designation may be the Universal Product Code (U.P.C.) printed in U.P.C. symbology, Code 39 or UCC/EAN-128 symbology. The symbology used shall be mutually agreed upon by the manufacturer/supplier and the customer.

For Code 39 bar code symbols, the appropriate Data Identifier shall follow the start character and precede the product identification data within the bar code symbol, but shall not appear in the human readable interpretation of the bar code data. The Data Identifier shall also appear as human readable text, enclosed in parenthesis, and shall precede the field title of each Code 39 bar code data field.

For UCC/EAN-128 symbols the appropriate Application Identifier shall be used in accordance with the *ANSI/UCC-4 UCC128 Application Identifier Standard*.

When the U.P.C. number is printed in U.P.C. symbology, it shall meet the requirements of *ANSI/UCC-1 U.P.C. Symbol Specification Manual*. An example of a U.P.C. number printed in U.P.C. symbology is shown in Figure 3. When a U.P.C. number is used as the *Product Identification* and is encoded in a Code 39 symbology, a secondary bar code data field encoding the *Quantity* data is required. An example of a label containing the U.P.C. number in Code 39 symbology is shown in Figure 6.

Figure 6 - An example of a minimum size label containing the mandatory data fields when a U.P.C. number is used for product identification and is printed in Code 39 symbology.



4.1.3.1.1 DATA FIELD LENGTH

To determine the maximum numbers of characters that can be encoded in a Code 39 bar code symbol in the **Product Identification** data field, see Table 1.

4.1.3.1.2 DIMENSIONS

The recommended minimum height of the bar code symbol in the **Product Identification** data field is 0.5 inch (13 mm) but shall never be less than 0.375 inch (10 mm). The recommended minimum height of the human readable interpretation shall be 0.2 inch (5 mm) but shall never be less than 0.15 inch (4 mm).

The dimensions of the bar code and human readable text when using the U.P.C. symbology shall be in accordance with the *ANSI/UCC-1 U.P.C. Symbol Specification*.

4.1.3.1.3 QUANTITY

The **Quantity** data field is a mandatory bar code data field for Code 39 bar code symbols. The quantity indicated on the label shall be the quantity of the product (item) in the package or container to which the label is affixed. When the U.P.C. code is used in the **Product Identification** data field, the **Quantity** data field is optional. In most circumstances the U.P.C. code represents one “consumer unit” or an understood quantity of one. Therefore, the quantity data field is generally not needed when a U.P.C. code is used to identify a product.

For Code 39 bar code symbols, the appropriate Data Identifier shall follow the start character and precede the product identification data within the bar code symbol, but shall not appear in the human readable interpretation of the bar code data. The Data Identifier shall also appear as human readable text, enclosed in parenthesis, and shall precede the field title of each bar code data field.

For UCC/EAN-128 bar code symbols, the appropriate Application Identifier shall be used in accordance with *ANSI/UCC-4 UCC 128 Application Identifier Standard*.

4.1.3.1.4 DATA FIELD LENGTH

To determine the maximum numbers of characters that can be encoded in a Code 39 bar code symbol in the *Quantity* data field, see Table 1.

4.1.3.1.5 DIMENSIONS

The recommended minimum height of the bar code symbol in the *Quantity* data field is 0.5 inch (13 mm) but shall never be less than 0.375 inch (10 mm). The recommended minimum height of the human readable interpretation shall be 0.2 inch (5 mm) but shall never be less than 0.15 inch (4 mm).

4.1.3.1.6 UNIT OF MEASURE

Additional data may be included in the *Quantity* data field to indicate the unit of measure that is being used in the quantity count. This additional data consists of the two-character unit of measure abbreviation in accordance with the *American National Standard (ANSI) X12.3 Data Element Number 355 Unit of Measure Code*.

The default, or understood, unit of measure for a quantity is "each". The two-character abbreviation for "each" is EA. The printing of the "EA" default abbreviation in human readable text is optional. When other two-character abbreviations are used, they shall be located to the immediate right of the quantity value within the bar code symbol and shown in human readable text to the right of the human readable text of the quantity value. The recommended minimum height of the human readable characters in the *Unit of Measure* data field shall be 0.2 inch (5 mm) but shall not be less than 0.15 inch (4 mm).

If the two-character abbreviation of the unit of measure is included in the bar code symbol, then the data identifier shall be "7Q".

4.1.4 OPTIONAL DATA FIELDS

The following optional data fields may be added to the label format to increase the usefulness of the label and to provide a standardized formats that can satisfy a broad spectrum of users and applications that require such information to be simultaneously conveyed on a single label. Agreements should be made between the manufacturer/supplier and the customer as to the additional of each optional data field and its specific use.

Serial Number
Manufacturer/Supplier Identification
Description
Special

4.1.4.1 SERIAL NUMBER

The *Serial Number* data field is an optional bar code data field. It shall contain the serial number or code assigned by the manufacturer/supplier to identify a unique product (item).

For Code 39 bar code symbols, the appropriate Data Identifier shall follow the start character and precede the product identification data within the bar code symbol, but shall not appear in the human readable interpretation of the bar code data. The Data Identifier shall also appear as human readable text, enclosed in parenthesis, and shall precede the field title of each bar code data field.

When a UCC/EAN-128 bar code symbol is used to encode serial number data, the appropriate Application Identifier shall be used in accordance with *ANSI/UCC-4*.

4.1.4.1.1 DATA FIELD LENGTH

To determine the maximum numbers of characters that can be encoded in a Code 39 bar code symbol in the *Serial Number* data field, see Table 1.

4.1.4.1.2 DIMENSIONS

The recommended minimum height of the bar code symbol in the *Serial Number* data field is 0.5 inch (13 mm) but shall never be less than 0.375 inch (10 mm). The recommended minimum height of the human readable interpretation shall be 0.2 inch (5 mm) but shall never be less than 0.15 inch (4 mm).

4.1.4.2 MANUFACTURER/SUPPLIER IDENTIFICATION

The *Manufacturer/Supplier Identification* data field is a optional data field that may contain a bar code symbol, human readable text or graphical information. It is recommended that the unique six digit company identification code assigned by the Uniform Code Council be used with a preceding zero. This seven digit code uniquely identifies a manufacturer in the international marketplace when using

UCC/EAN compatible labeling practices.

When the field contains a Code 39 bar code symbol, the appropriate Data Identifier shall follow the start character and precede the supplier identification data within the bar code symbol, but shall not appear in the human readable interpretation of the bar code data. The Data Identifier shall also appear as human readable text, enclosed in parenthesis, and shall precede the field title of each bar code data field.

4.1.4.2.1 DATA FIELD LENGTH

To determine the maximum numbers of characters that can be encoded in a Code 39 bar code symbol in the *Manufacturer/Supplier Identification* data field, see Table 1.

4.1.4.2.2 DIMENSIONS

The recommended minimum height of the bar code symbol in the *Manufacturer/Supplier Identification* data field is 0.5 inch (13 mm) but shall never be less than 0.375 inch (10 mm). The recommended minimum height of the human readable interpretation shall be 0.2 inch (5 mm) but shall never be less than 0.15 inch (4 mm).

4.1.4.3 DESCRIPTION

The *Description* data field may contain a bar code symbol, human readable text or graphical information. This data field is mandatory for product package labels affixed to packages that will be received at Lucent Technologies facilities. Descriptive information such as AT,KS, WP or code number and issue or series number is required when applicable.

When the *Description* data field contains a Code 39 bar code symbol, the appropriate Data Identifier shall follow the start character and precede the supplier identification data within the bar code symbol, but shall not appear in the human readable interpretation of the bar code data. The Data Identifier shall also appear as human readable text, enclosed in parenthesis, and shall precede the field title of each bar code data field.

When a UCC/EAN-128 bar code symbol is used to encode serial number data, the appropriate Application Identifier shall be used in accordance with ANSI/UCC-4.

4.1.4.3.1 DATA FIELD LENGTH

To determine the maximum numbers of characters that can be encoded in a Code 39 bar code symbol in the *Description* data field, see Table 1.

4.1.4.3.2 DIMENSIONS

The recommended minimum height of the bar code symbol in the *Description* data field is 0.5 inch (13 mm) but shall never be less than 0.375 inch (10 mm). The recommended minimum height of the human readable interpretation shall be 0.2 inch (5 mm) but shall never be less than 0.15 inch (4 mm).

4.1.4.4 SPECIAL

The *Special* data field is an optional data field that may contain a bar code symbol, human readable text or graphical information.

The *Special* data field may have more than one occurrence on the label to satisfy optional information requirements. The data field may be used for any additional information not detailed in this specification, but needed by Lucent Technologies factories (e.g., traceability code, country of origin, date of manufacture, source inspection code, shelf life information etc...)

When the *Special* data field contains a Code 39 bar code symbol, the appropriate Data Identifier shall follow the start character and precede the supplier identification data within the bar code symbol, but shall not appear in the human readable interpretation of the bar code data. The Data Identifier shall also appear as human readable text, enclosed in parenthesis, and shall precede the field title of each bar code data field.

4.1.4.4.1 DATA FIELD LENGTH

To determine the maximum numbers of characters that can be encoded in a Code 39 bar code symbol in the *Special* data field, see Table 1.

4.1.4.4.2 DIMENSIONS

Note that the height of the *Special* data field may be twice that of other data fields. This is to provide space to comply with industry standards that may require special bar code symbols or product information. The recommended minimum height of the bar code symbol in the *Special* data field is 0.5 inch (13 mm) but shall never be less than 0.375 inch (10 mm). The recommended minimum height of the human readable interpretation shall be 0.2 inch (5 mm) but shall never be less than 0.15 inch (4 mm).

4.2 BAR CODE DATA FIELD SIZES - CODE 39

TABLE 1
Bar Code Data Field Sizes - Code 39

Label Width	Maximum Number of Bar Code Characters					
	X-Dim.=0.0100		X-Dim.=0.0135		X-Dim.=0.0170	
	N=2.5:1 (highest density)	N=3.0:1	N=2.5:1	N=3.0:1	N=2.5:1	N=3.0:1
3.0 (76)	17	15	12	11	10	8
4.0 (102)	24	22	18	16	14	13
5.0 (127)	31	28	23	21	18	16

TABLE 1 NOTES:

1. Quiet zones are assumed to be 0.25 inch (6.4 mm) each. See Section 5.3.
2. Intercharacter gap is equal to X-Dimension. See Section 5.2.
3. Each character total includes the start and stop characters and data identifiers.

5. BAR CODE REQUIREMENTS**5.1 BAR CODE SYMBOLOGY**

Code 39 is the recommended symbology for all data fields. The data character set shall contain 43 characters: 0 to 9, A to Z, -,.,/+,%,\$, and a space. The Code 39 symbology shall be in accordance with AIM USS-39 Uniform Symbology Specification. The use of other symbologies shall be in accordance with the respective AIM or UCC symbology requirements standards.

5.2 BAR CODE DENSITY

The density of the bar code symbol, as defined by the nominal width of the narrow elements (X-dimension), shall be in the range of 0.010 inch (0.254 mm) to 0.017 inch (0.432 mm) as shown in Table 1.

Symbols of 0.010 inch (0.254 mm) X-dimension are recommended. X-dimensions of 0.013 inch (0.343 mm) and 0.017 inch (0.432 mm) are included to accommodate existing systems. The X-dimension should be uniform for any given label.

The element width ratio (N) shall be uniform for any given bar code symbol on the label. The element width ratio (N) shall be either 2.5:1 or 3.0:1 for all bar code symbols on any given label.

The intercharacter gap shall be in the range of 1X to 2X.

5.3 QUIET ZONE

The minimum clear area immediately preceding and following the bar code symbol shall be 0.17 inch (4.3 mm). For optimum wand scanning the quiet zone should be a minimum of 0.25 inch (6.4 mm).

5.4 PRINT QUALITY

The methodology for determining bar code print quality shall be in accordance with ANSI X3.182-1995 Bar Code Print Quality - Guideline and also Section 4.7 of the Lucent Technologies Standard 801-001-105. The minimum bar code print quality grade shall be 1.5/05/670. Print quality measurements shall also be met when the label is in its final configuration on the product package.

6. ENVIRONMENTAL CONSIDERATIONS

Environmental considerations shall be accordance with Section 5.0 of the Lucent Technologies Standard 801-001-105. The bar code requirements prescribed in Section 4.0 of 801-001-105 shall also be met after the label is subjected to the required environmental testing.

These labels are intended primarily for indoor use. Exposure to direct sunlight, rain and high humidity may seriously affect the scannability of the label. If labels are to be used in an external environment, special requirements should be between trading partners.

To facilitate recyclability, the label material should be compatible with the substrate material to which it is attached.

7. LABEL LOCATION

Label location refers to the positioning of the label on the package. The label should be positioned on the label in a location that facilitates bar code label scanning.

APPENDIX A

DEFINITIONS

AIM - AIM USA, 634 Alpha Drive, Pittsburgh, PA, 15238-2802, Phone (412) 963-8588.

Alphanumeric - The character set that contains letters, numbers, and usually other characters such as punctuation marks.

ANSI - The American National Standards Institute; a non governmental organization responsible for the coordination of voluntary national standards. 11 West 42nd Street, New York, NY 10036, Phone (212) 642-4900.

Aperture - The physical opening in an optical system that establishes the field of view

Application Identifier - The numeric codes assigned by UCC/EAN to identify contents of UCC/EAN-128 bar code symbols. Application identifiers are two digits in length for commonly used data with one or two additional digits for data content variables.

ASC - Accredited Standards Committee

ASTM - American Society for Test and Materials

Bar - The darker element of a bar code symbol.

Bar Code - An array of parallel rectangular bars and spaces that together represent data elements or characters in a particular bar code symbology.

Bar Code Character - A single group of bars and spaces that represent an individual letter, number, punctuation mark or other symbol.

Bar Code Density - The number of data characters that can be represented in a linear unit of measure. Bar code density is a function of the "X" dimension, element width ratio, and intercharacter gap.

Bar Code Reader or Scanner - A device used for machine reading of a bar code. Readers may employ hand held wands, fixed optical beams, moving laser beams, or hand-held moving laser beams. See **scanner**.

Bar Code Symbol - An array of rectangular bars and spaces that are arranged in a predetermined pattern following specific rules to represent elements of data that are referred to as characters. A bar code symbol contains a leading quiet zone, start pattern data character(s) including a check character (if any), stop pattern, and a trailing quiet zone.

Bar Height - The bar dimension perpendicular to the bar width. Also called bar length.

Bar Length - See "**Bar Height**".

Bar Width - The perpendicular distance across a bar measured from a point on one edge to a point on the opposite edge. Each point will be defined as having a reflectance that is 50 percent of the difference between the background and bar reflectance.

Character - A letter, digit, or other special form that is used as a part of the organization, control, or representation of data. A character is often in the form of a spatial arrangement of adjacent or connected strokes.

Character Set - Those characters that are available for encoding within the bar code symbol.

Check Character - A character included within a message whose value is used for the purpose of performing a mathematical check to ensure the accuracy of that message. In this standard a check character shall not be used in Code 39 symbology.

Code 39 - The 3 of 9 bar code is a variable length, discrete, self-checking, bi-directional, alphanumeric bar code. Its character set contains 43 meaningful characters: 0-9, A-Z, -, ., \$, /, %, *, and space. Each character is composed of nine elements: five bars and four spaces. Three of the nine elements are wide (binary value 1), and six elements are narrow (binary value 0). The character (*) is used for both start and stop character.

Customer Product Identification - A combination of alphanumeric characters used by a customer or buyer to identify a product.

Data Field - The specific portion or area of a label designated to contain human readable, bar code or graphic information.

Data Identifier - A specified character string used with Code 39 that defines the specific intended use of the data that immediately follows. The identifier shall be an alphabetic character preceded by up to three numeric characters. The data identifiers shall be those published by FACT. The appropriate data field identifier also appear as human readable text, preceding the corresponding field title of each bar code data field.

Density - See "**Bar Code Density**".

EAN - The International Article Numbering Association

Element - In a bar code symbol, a single bar or space.

Element Width Ratio - The ratio of the average width of the wide elements to the average width of the narrow elements within a bar code symbol.

- Human Readable Interpretation (HRI)** - The interpretation of the encoded bar code data presented in a human readable font.
- Intercharacter Gap** - The space between the last element of one character and the first element of the adjacent character of a discrete bar code symbol.
- Mandatory Data Field** - A data field that must always contain data.
- Manufacturer/Supplier Identification Code** - A code that uniquely identifies a manufacturer/supplier.
- Manufacturer/Supplier Product Identification Number** - A combination of alphanumeric characters used by a manufacturer/supplier to identify a product.
- Nominal Width** - The ideal width excluding any tolerance. For a printed bar code symbol, the average width for each element size.
- Optional Data Field** - A data field that may be added to the label based on the needs of the customer and the supplier/manufacturer.
- Print Quality** - The measure of compliance of a bar code symbol to the requirements of dimensional tolerance, edge roughness, spots, voids, reflectance, quiet zone and encodation.
- Product Package** - The first tied, wrap or container to a single product or quantity thereof that constitutes a complete identifiable package. A product package may be an item packaged singularly, multiple quantities of the same item packaged together or a group of parts packaged together (e.g., component tray, reel or kit).
- Product Package Label** - The label on each individual product package that identifies the product and that may identify the manufacturer/supplier.
- Quiet Zone** - A clear area, that precedes the start character and follows the stop character of a bar code symbol. Sometimes called the "Clear Area".
- Reflectance** - The ratio of the amount of light of a specified wavelength, or series of wavelengths, reflected from a test surface to the amount of light reflected from a barium sulfate or magnesium oxide standard.
- Scanner** - An optical and electronic device that scans bar code symbols and outputs the bar code information in the form of electrical signals suitable for input to a computer system.
- Self-Checking Bar Code** - A bar code that uses a checking algorithm that can be applied against each character to guard against undetected errors.

Space - The lighter element of a bar code usually formed by the background between bars.

Start and Stop Characters - Distinct characters or patterns used at the beginning and end of each bar code symbol that provide initial timing references and direction-of-read information to the decoding logic.

Substrate - The material (e.g., paper, plastic, metal) upon which a bar code symbol is "printed" or reproduced.

TCIF - Telecommunications Industry Forum c/o ATIS Alliance for Telecommunications Industry Solutions, 1200 G Street, N.W., Suite 500, Washington, D.C., 20005, Telephone (202) 434-8844.

Trading Partners - A buyer and seller of goods or services who establishes a mutual agreement to conduct a transaction.

Uniform Code Council (UCC) - An organization that assigns product and supplier/manufacturer identification numbers. 8163 Old Yankee Road, Suite J, Dayton, Ohio 45458, Telephone (513) 435-3870

Universal Product Code (U.P.C.) - The twelve digit product identifier consisting of a six digit company identification number, a five digit item number and a calculated check digit.

USS 39 - Universal Symbology Specification Code 39.

Verification - The process of ensuring that bar code print quality conforms to user specifications or to published industry standards; i.e., ANSI X3.82-1990 and EIA-556-A.

X Dimension - The intended width of the narrow element. The narrow bar and the narrow space are equal in Code 39.

APPENDIX B**REFERENCES**

1. American National Standard X12.3 Data Element Number 355 Unit of Measure Code available from the American National Standards Institute (ANSI) 11 West 42nd Street, New York, NY, 10036, phone (212) 642-4900.
2. American National Standard X3.182-1995 Bar Code Print Quality Guidelines available from the American National Standards Institute (ANSI) 11 West 42nd Street, New York, NY, 10036, phone (212) 642-4900.
3. American National Standard ANSIMH10.8.2 Data Application Identifier standard available from the American National Standards Institute (ANSI) 11 West 42nd Street, New York, NY, 10036, phone (212) 642-4900
4. ASTM D-1000 Testing Procedures, available from ASTM, 1916 Race Street, Philadelphia, PA 19103, phone (215) 299-5585.
5. Telecommunications Industry Forum (TCIF) Implementation Guide to Package Labeling BC/93-002 available from the TCIF/ATIS, 1200 G Street, N.W., Suite 500, Washington, D.C. 20005, phone (202) 434-8844
6. Telecommunications Industry Forum (TCIF) Product Package Label Specification BC/95-003 available from TCIF/ATIS, 1200 G Street, N.W., Suite 500, Washington, D.C. 20005, phone (202) 434-8844
7. Universal Product Code: Industrial and Commercial Guidelines ANSI/UCC-1, ANSI/UCC-4 and ANSI/UCC-6 available from the Uniform Code Council (UCC), 8163 Old Yankee Road, Suite J, Dayton, OH 45458, phone (513) 435-3870.