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# Consumer Package Labeling Guide: Selling by Length and Area



## NIST SP 1020-4

# Consumer Package Labeling Guide: Selling by Length and Area

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# **I**ntr**o**duction

This guide is intended to provide manufacturers, packers, distributors, and retailers of packaged products with information about the labeling requirements for commodities that are sold by length and area in the consumer marketplace. The information in this guide is based on the Uniform Packaging and Labeling Regulation contained in National Institute of Standards and Technology (NIST) Handbook 130<sup>1</sup>. NIST develops Handbook 130 in cooperation with the National Conference on Weights and Measures, an organization of industry representatives, government officials, and other interested parties. Handbook 130 is adopted and enforced by many state and local regulatory agencies.

## **D**eclaration of Identity

The identity of the product shall appear on the package label and shall not be misleading or deceptive. When the label appears directly on the package, the identity of the product shall appear on the principal display panel and be generally parallel to the base of the package. The principal display panel is the panel of the package that the manufacturer, packer, or distributor intends to be displayed at retail. Directions on how to determine the area of the principal display panel are included later in this guide. The base of the package shall be determined by how the package is designed to be displayed.

The identity shall be:

- the name specified in, or required by, any federal or state regulation, or
- the common or usual name, or
- the generic name or other appropriate description, including a statement of function. For example: "paper towels" or "copper tubing."

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<sup>1</sup>"Uniform Laws and Regulations in the area of legal metrology and engine fuel quality."

## **D**eclaration of Responsibility

The name and address of the manufacturer, packer, or distributor must be conspicuously displayed on any package that is sold, kept, offered, or exposed for sale at a location other than the premises where it was packed. The name shall be the actual corporate name or, when not incorporated, the name under which business is conducted. The address shall include the street address, city, state<sup>2</sup>, and ZIP code<sup>3</sup>. The street address may be omitted, however, if it is listed in a current city or telephone directory.

Unless it would be misleading, the declaration may be the responsible party's principal place of business instead of the location where the commodity was manufactured, packed, or distributed. When the responsible party is not the manufacturer, the declaration shall include the responsible party's connection with the package, such as "Manufactured for and packed by" or "Distributed by."

## **D**eclaration of Quantity

All declarations of net quantity shall appear on the package label and shall be accurate exclusive of all packaging materials. When the label appears directly on the package, the quantity declaration shall appear in the lower 30 % of the principal display panel and be generally parallel to the base of the package.

## **Units and Symbols**

For metric declarations:

- The metric units required are those of the International System of Units (SI).
- The units of length and area used in an SI quantity declaration shall be in terms of the meter or square meter. Only the following

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<sup>2</sup>The country name if outside the United States.

<sup>3</sup>The country mailing code if outside the United States.

words and symbols for SI units shall be used in conjunction with a length or area declaration:

micrometer	$\mu\text{m}$
millimeter	mm
centimeter	cm
meter	m
square millimeter	$\text{mm}^2$ or sq mm
square centimeter	$\text{cm}^2$ or sq cm
square meter	$\text{m}^2$ or sq m

For inch-pound declarations:

- The units of length and area used in an inch-pound quantity declaration shall be in terms of the inch, foot, yard, square inch, square foot, and square yard. Only the following words and abbreviations shall be used in conjunction with a length or area declaration:

inch	in
foot	ft
yard	yd
square inch	$\text{in}^2$ or sq in
square foot	$\text{ft}^2$ or sq ft
square yard	$\text{yd}^2$ or sq yd

## **Capitalization**

SI symbols for length and area shall not be capitalized. Inch-pound abbreviations for length and area may appear in both upper and lower case letters.

## **Use of Punctuation**

Periods or other punctuation shall not be used after an SI symbol. Periods or other punctuation should not be used after inch-pound abbreviations.

## **Use of Spaces**

A space should be used between the number and the symbol or abbreviation to which it refers. For example: 25 ft<sup>2</sup>, not 25ft<sup>2</sup>; 1.5 yd, not 1.5yd, 3¼ in, not 3¼ in.

## **Singular Form**

SI symbols shall always be written in the singular form. An "s" shall not be added to a symbol to express the plural of the symbol. Inch-pound abbreviations should also be written in the singular form. For example, "m" is the symbol for both "meter" and "meters;" "ft" is the abbreviation for both "foot" and "feet."

## **Prohibited Symbols**

Incorrect symbols to use in SI quantity declarations of length or area include: mtr, M, and MM.

Incorrect symbols to use in inch-pound quantity declarations of length or area include: yrd, sqr ft, and ins.



## **Use of Units and Symbols**

### **Largest Whole Unit**

The quantity declaration shall be in terms of the largest whole unit of length or area, with any remainder expressed in fractions. Decimal fractions shall not be carried out to more than three places.

For SI declarations:

- A length of less than one centimeter shall be expressed in millimeters; an area of less than one square centimeter shall be expressed in square millimeters.
- A length of more than one centimeter but less than 1 meter shall be expressed in centimeters and decimal fractions of a centimeter; an area of more than one square centimeter but less than one square meter shall be expressed in square centimeters and decimal fractions of a square centimeter.
- A length of more than one meter shall be expressed in meters and decimal fractions of a meter; an area of more than one square meter shall be expressed in square meters and decimal fractions of a square meter.
- Any remainder must be expressed as a decimal fraction of the largest whole unit. For example: 1.25 m not 1<sup>1</sup>/<sub>4</sub> m; 420.2 mm<sup>2</sup> not 420<sup>1</sup>/<sub>5</sub> mm<sup>2</sup>; 3.5 cm not 3 cm 500 mm.

For inch-pound declarations:

- A length of less than one foot shall be expressed in inches and fractions of an inch; an area of less than one square foot shall be expressed in square inches and fractions of a square inch.
- A length of more than one foot, but less than one yard, shall be expressed in feet and decimal fractions of a foot; an area of more than one square foot but less than one square yard shall be expressed in square feet and decimal fractions of a square foot.

- A length of more than one yard shall be expressed in terms of the largest whole unit with any remainder expressed in yard and fractions of a yard; an area of more than one square yard shall be expressed in terms of the largest whole unit with any remainder expressed in square yards and fractions of a square yard.
- A remainder may be expressed as either a common or decimal fraction. For example: 1.5 yd,  $3\frac{1}{2}$  ft, 14.3 in<sup>2</sup>, and  $12\frac{1}{4}$  sq yd are all acceptable.

Or,

- A remainder may be expressed in the next smaller whole units or units with any further remainder expressed in terms of a common or decimal fraction of the smallest unit present. For example: 1 ft 8 in and 3 yd 8.3 ft are also acceptable.

## **Rule of 1000**

The selected multiple or submultiple prefixes for SI units shall result in numerical values between 1 and 999. This rule requires millimeters to be used where a length declaration is less than 1 centimeter. For example: 500 mm not 0.5 cm; 1.4 m not 1400 cm.

## **Number of Digits Displayed**

Decimal fractions shall not be carried out to more than three places.

SI declarations shall be shown in three digits except where the quantity is below 100 millimeters. If below 100 millimeters, the SI declaration may be shown in two digits. In either case, any final zero appearing to the right of the decimal point need not be shown.

## **Dual Unit Declarations**

A quantity declaration shall usually appear in both SI and inch-pound units. Either unit may appear first in the declaration. For example: 2 m (2.1 yd) and 1.8 ft (54.8 cm) are both acceptable.

## **Rounding**

When declaring equivalent SI and inch-pound quantities on a package, neither declaration may overstate or understate the actual quantity. Conversions, the proper use of significant digits, and rounding must be based on the packer's knowledge of the accuracy of the original measurement that is being converted. Net contents declarations shall not be rounded up to overstate a quantity. When, as a result of rounding, metric and inch-pound declarations do not exactly match, the quantity of product in the package must meet the largest declaration.

## **Fractions**

An SI quantity declaration shall contain only decimal fractions. For example: 1.5 m not  $1\frac{1}{2}$  m.

In an inch-pound quantity declaration that contains common fractions, all fractions shall be reduced to their lowest term. For example:  $\frac{1}{2}$  not  $\frac{2}{4}$ ;  $\frac{1}{8}$  not  $\frac{4}{32}$ . In addition, common fractions shall be in terms of halves, quarters, eighths, sixteenths, or thirty-seconds unless there is a firmly established general consumer usage and trade custom of employing different common fractions for a particular commodity. For example:  $3\frac{5}{16}$  ft not  $3\frac{1}{3}$  ft;  $1\frac{3}{8}$  yd<sup>2</sup> not  $1\frac{2}{5}$  yd<sup>2</sup>;  $14\frac{9}{16}$  in not  $14\frac{4}{7}$  in.

## **Words Accompanying a Quantity Declaration**

### **Use of Phrase "Net"**

A quantity declaration may stand alone, or may include the term "net quantity," or just the word "net." For example: Net Qty 100 sq cm (3.28 sq ft); Net 6 in (15.24 cm); 1 m<sup>2</sup> (1.09 yd<sup>2</sup>); and 2.4 ft (73.15 cm) are all acceptable.

## **Qualifying Phrases Prohibited**

Words or phrases that qualify the quantity declaration shall not appear on the consumer package. For example: words and phrases like "approximately," "minimum," "when packed," "not less than," "giant," "jumbo," and "full" are prohibited.

## **Combination Declarations**

When a quantity declaration of length or area is not fully informative on its own, it shall be combined with appropriate declarations of weight, measure, count, or size. All combination declarations shall be accurate and shall appear as part of the quantity declaration.

## **Supplemental Declarations**

When appropriate, the required quantity declaration may be supplemented by one or more additional declarations of weight, measure, or count. All supplemental declarations shall be accurate and shall appear somewhere other than on the principal display panel.

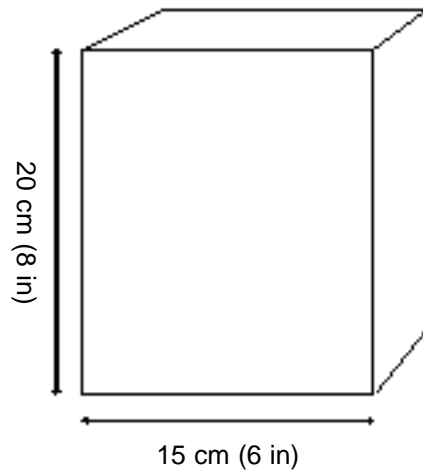
## **Prominence and Placement**

All information required to appear on a consumer package shall be prominently displayed in the English language. Any required information that is hand lettered shall be clear and equal in legibility to printed materials.

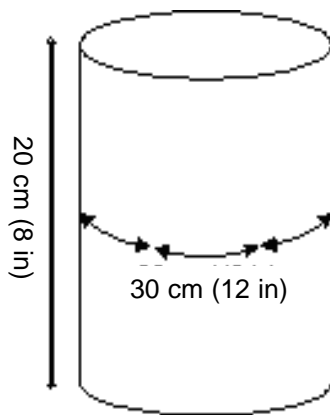
## **Principal Display Panel**

The area of the principal display panel shall be:

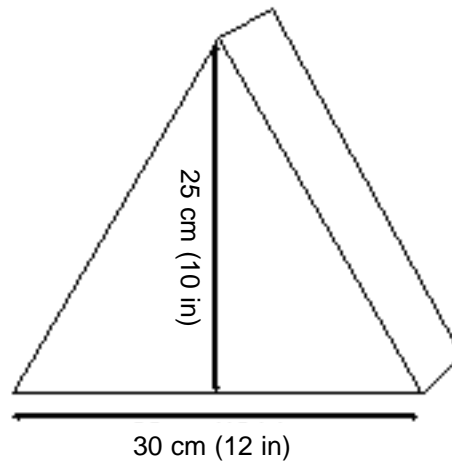
- for rectangular containers, the height times the width (H x W) of the front of the package, where the front of the package is determined based on how the package is designed to be displayed;



- for cylindrical or nearly cylindrical containers, 40 % of the height times the circumference  $[0.4 \times (H \times C)]$  of the container;



- for other shaped containers, 40 % of the total surface area of the container. If the container has an obvious principal display panel (for example, the face of a triangular or circular package of cheese, or the top of a can of shoe polish), the area shall be calculated from the shape of that surface.



### **Color Contrast**

The quantity declaration shall be in a color that contrasts conspicuously with its background. However, the quantity declaration may be blown, formed, or molded on a glass or plastic surface if no other label information is presented in a contrasting color.

### **Free Area**

The area surrounding the quantity declaration shall be free of printed information:

- above and below by a space equal to at least the height of the declaration lettering; and
- to the left and right by a space equal to twice the width of the letter "N" of the declaration lettering type and style.

### **Style of Type**

The quantity declaration shall be in a style of type or lettering that is bold, clear, and conspicuous when compared to other type, lettering, or graphics on the package. However, if all the label information is blown, formed, or molded on a glass or plastic surface, then the quantity declaration may also be blown, formed, or molded on the surface.

## **Proportionality**

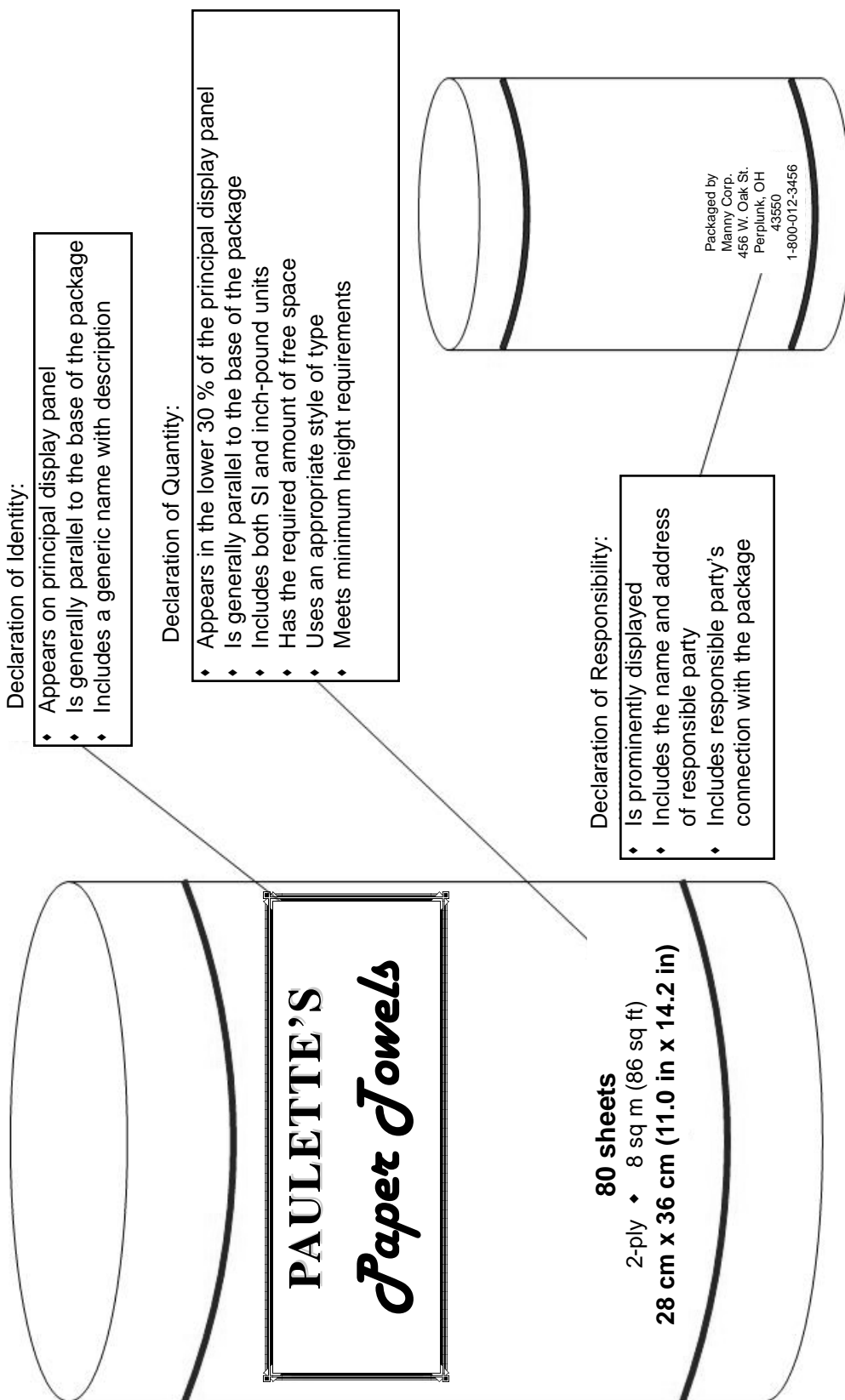
No number or letter shall be more than three times as high as it is wide.

## **Minimum Height**

The height of any letter or number in the quantity declaration shall be at least that shown in the Table on the following page. When all lowercase letters are used in SI symbols, it is the lowercase "d," or its equivalent in the print or type, that shall meet the minimum height requirement. No letter shall be less than 1.6 mm ( $1/16$  in) in height. Other letters and exponents shall be presented in the same type style and in proportion to the type size used.

<b>Minimum Height of Numbers and Letters</b>		
<b>Area of Principal Display Panel</b>	<b>Minimum Height: Numbers and Letters</b>	<b>Minimum Height: Label information blown, formed, or molded on surface of container</b>
Less than or equal to 32 cm <sup>2</sup> (5 in <sup>2</sup> )	1.6 mm ( <sup>1</sup> / <sub>16</sub> in)	3.2 mm ( <sup>1</sup> / <sub>8</sub> in)
More than 32 cm <sup>2</sup> (5 in <sup>2</sup> ) and less than or equal to 161 cm <sup>2</sup> (25 in <sup>2</sup> )	3.2 mm ( <sup>1</sup> / <sub>8</sub> in)	4.8 mm ( <sup>3</sup> / <sub>16</sub> in)
More than 161 cm <sup>2</sup> (25 in <sup>2</sup> ) and less than or equal to 645 cm <sup>2</sup> (100 in <sup>2</sup> )	4.8 mm ( <sup>3</sup> / <sub>16</sub> in)	6.4 mm ( <sup>1</sup> / <sub>4</sub> in)
More than 645 cm <sup>2</sup> (100 in <sup>2</sup> ) and less than or equal to 2581 cm <sup>2</sup> (140 in <sup>2</sup> )	6.4 mm ( <sup>1</sup> / <sub>4</sub> in)	7.9 mm ( <sup>5</sup> / <sub>16</sub> in)
More than 2581 cm <sup>2</sup> (400 in <sup>2</sup> )	12.7 mm ( <sup>1</sup> / <sub>2</sub> in)	14.3 mm ( <sup>9</sup> / <sub>16</sub> in)
Note: The type and size requirements specified in this table do not apply to the “e” mark.		





**Figure 1: Example of a package labeled to be sold by length and area**

Conversion Factors – Length (underlined figures are exact)						
Units	Inches	Feet	Yards	Millimeters	Centimeters	Meters
1 inch	= $\frac{1}{2}$	0.083 333 33	0.027 777 78	<u>25.4</u>	<u>2.54</u>	<u>0.025 4</u>
1 foot	= $\frac{12}{36}$	<u>1</u>	0.333 333 3	<u>304.8</u>	<u>30.48</u>	<u>0.304 8</u>
1 yard	= $\frac{36}{108}$	<u>3</u>	<u>1</u>	<u>914.4</u>	<u>91.44</u>	<u>0.914 4</u>
1 millimeter	= $\frac{0.039 370 08}{0.039 370 08}$	0.003 280 840	0.001 093 613	<u>1</u>	<u>0.1</u>	<u>0.001</u>
1 centimeter	= $\frac{0.393 700 8}{0.393 700 8}$	0.032 808 40	0.010 936 13	<u>10</u>	<u>1</u>	<u>0.01</u>
1 meter	= $\frac{39.370 08}{39.370 08}$	3.280 840	1.093 613	<u>1000</u>	<u>100</u>	<u>1</u>

Conversion Factors –Area (underlined figures are exact)					
Units	Square Inches	Square Feet	Square Yards	Square Millimeters	Square Centimeters
1 sq inch	= $\frac{1}{144}$	0.006 944 444	0.000 771 604 9		6.451 6
1 sq foot	= $\frac{144}{1296}$	<u>1</u>	0.111 111 1		929.030 4
1 square yard	= $\frac{1296}{1550.003}$	9	<u>1</u>	<u>1</u>	8361.273 6
1 sq millimeter	= $\frac{0.155 000 3}{1550.003}$	0.001 076 391	0.000 119 599	<u>100</u>	<u>0.000 000 1</u>
1 sq centimeter	= $\frac{1550.003}{1550.003}$	10.763 91	1.195 990	<u>1 000 000</u>	<u>10 000</u>
1 sq meter	= $\frac{1550.003}{1550.003}$	10.763 91	1.195 990	<u>1 000 000</u>	<u>10 000</u>

How to use the conversion factors:

- (1) Look up the unit that you already have in the left-hand column.
- (2) Travel along the row for that unit until you reach the column of the unit that you want.
- (3) The number in the location where the unit that you have and the unit that you want intersect is the conversion factor.
- (4) Multiply the number that corresponds to the unit that you have by the conversion factor. The resulting number is the equivalent value in the units that you want.

For example: You have a length of 1.3 yards that you want to convert to meters. Using the chart, the conversion factor for going from yards to meters is 0.914 4. Multiply the number of yards by 0.914 4 to get the number of meters.

$$1.3 \text{ yd} \times 0.914 4 \text{ m/yd} = 1.188 72 \text{ m}$$

# **Contact Information**

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## **U.S. Food and Drug Administration**

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**Handbook 130** is available on the NIST Weights and Measures Division website at: [www.nist.gov/owm](http://www.nist.gov/owm); click on "Handbook 130, Uniform Laws and Regulations" under the "Quick List (popular links)" section.

The **Fair Packaging and Labeling Act (FPLA)** is available

- on the FDA website at: [www.fda.gov/opacom/laws/fplact.htm](http://www.fda.gov/opacom/laws/fplact.htm); or
- on the FTC website at: [www.ftc.gov/ogc/stat3.htm](http://www.ftc.gov/ogc/stat3.htm),  
click on "Fair Packaging and Labeling Act  
(80 Stat. 1296, 15 U.S.C. §§ 1451-1461)."

A **Food Labeling Guide** is available on the FDA website at:

[www.cfsan.fda.gov/~dms/flg-toc.html](http://www.cfsan.fda.gov/~dms/flg-toc.html)

## **Labeling Checklist for Length & Area**

### **Declaration of Identity**

- ☐ Appears on the principal display panel.
- ☐ Is generally parallel to the base of the package.
- ☐ Is the name specified in, or required by, federal or state regulation; the common or usual name; or the generic name or other appropriate description including a statement of function.

### **Declaration of Responsibility**

- ☐ Is conspicuously displayed on any package that is sold, kept, offered, or exposed for sale at a location other than the premises where it was packed.
- ☐ Includes the name and address of the manufacturer, the packer, or the distributor.
- ☐ Uses the actual corporate name or, when not incorporated, the name under which the business is conducted.
- ☐ Includes the city, state (or country), and ZIP code (or mailing code used in other countries).
- ☐ Includes the street address unless this information is listed in a current city or telephone directory.
- ☐ Uses the address of the responsible party's principal place of business or the address of the location where the package was manufactured, packed, or distributed unless such address would be misleading.
- ☐ If the responsible party is not the manufacturer, then includes the party's connection with the package (i.e., "Manufactured for and packed by," or "Distributed by").

## Declaration of Quantity

- ☐ Appears in the lower 30 % of the principal display panel.
- ☐ Appears generally parallel to the base of the package.
- ☐ Is prominently displayed in English (multi-lingual information is permitted).
- ☐ Is in a color that contrasts conspicuously with its background.
- ☐ Has an adequate amount of free area around it.
- ☐ Appears in a style of type or lettering is bold, clear, and conspicuous.
- ☐ Is of a type or lettering that is proportional.
- ☐ Is of a type or lettering that meets the minimum height requirements.
- ☐ Generally includes both SI and inch-pound units.
- ☐ Uses only approved words, symbols or abbreviations for the SI and inch-pound units.
- ☐ Uses SI symbols that are not capitalized.
- ☐ Uses SI symbols and inch-pound abbreviations that are not accompanied by punctuation marks or periods.
- ☐ Uses SI symbols and inch-pound abbreviations in the singular form.
- ☐ Is declared in the largest whole unit.
- ☐ SI units comply with the Rule of 1000.
- ☐ Uses SI declarations that are displayed in 2 or 3 digits.
- ☐ Is properly rounded so as to not overstate the quantity.
- ☐ Uses SI declarations containing only decimal fractions.
- ☐ Does not appear in conjunction with an improper qualifying phrase.
- ☐ When necessary, is combined with appropriate additional declarations.