



CALIFORNIA DEPARTMENT OF
FOOD & AGRICULTURE

Extracts from the
CALIFORNIA CODE OF REGULATIONS
TITLE 4, DIVISION 9

WEIGHTS AND MEASURES FIELD REFERENCE MANUAL (2017)

Chapter 10
Quantity Control
Sections 4500. Through 4536.2.

Article 1. General

**Article 2. Uniform Packaging and Labeling Regulation
(UPLR) NIST UPLR with Exceptions and Additions**

Article 3. Wood for Fuel Purposes



CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE
DIVISION OF MEASUREMENT STANDARDS

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Article 1. General

§ 4500. Standards for Fresh Berries.

Fresh berries shall be sold by net weight; or by volume in measure containers in specified capacities as follows:

- (a) Strawberries -Dry pint (33.6 cubic inches; net weight 12 oz.), or dry quart (67.2 cubic inches; net weight 1 lb. 6 oz.).
- (b) All other berries -Dry pint (33.6 cubic inches; net weight 12 oz.), or half dry pint (16.8 cubic inches; net weight 8 oz.). Half dry pints, dry pints, and dry quarts, when sold by volume, shall not be deemed to be packages for labeling purposes.

Berry containers (boxes, baskets or packaging in any manner), whether opened or covered shall not have a false bottom or be constructed as to facilitate deception or fraud.

Note: Authority cited: Sections 12027 and 12107.1, Business and Professions Code. Reference: Sections 12107.1 and 12601, Business and Professions Code.

§ 4501. Fish Sales by Weight.

The provisions of Section 12024.5, Chapter 1, Division 5 of the California Business and Professions Code shall apply to the sale or advertisement for sale of fin fish and crustaceans, when sold for human consumption, and when not alive.

Note: Authority cited: Sections 12027 and 12609, Business and Professions Code. Reference: Sections 12024.5 and 12024.8, Business and Professions Code.

§ 4502. Wood for Fuel Purposes.

Renumbering and amendment of former section 4502 to section 4531 filed 7-12-90; operative 8-11-90 (Register 90, No 35).

Note: Authority cited: Sections 12027 and 12107.1, Business and Professions Code. Reference: Section 12107.1, Business and Professions Code.

§ 4503. Gravimetric Testing of Fluid Products and Products Sold by Count.

Products sold by fluid measure or by count may be tested gravimetrically, by weights and measures officials, using procedures established by the Director. These procedures shall incorporate a statistical sampling plan established by Title 4, Chapter 8, Subchapter 2, Article 5, Sections 2930 through 2933.3.20 inclusive.

Note: Authority cited: Sections 12027, 12608 and 12609, Business and Professions Code. Reference: Sections 12608 and 12609, Business and Professions Code.

Article 2. Uniform Packaging and Labeling Regulation

§ 4510. Application

The packaging and labeling regulations as set forth in the most recent publication of the National Institute of Standards and Technology's Handbook 130, Uniform Laws and Regulations are herein adopted by reference as the packaging and labeling requirements for packaged commodities with the following exceptions and additional requirements.

Note: Authority cited: Sections 12027 and 12609, Business and Professions Code. Reference: Sections 12601 and 12609, Business and Professions Code.

§ 4511. Exceptions

The following sections in the Uniform Packaging and Labeling Regulation in the National Institute of Standards and Technology Handbook 130 are not adopted or incorporated by reference.

- (a) Section 2.11. Petroleum Products.
- (b) Section 6.13. Character of Declaration: Average.
- (c) Section 7.6. Character of Declaration: Average.
- (d) Section 12. Variation to be Allowed.
- (e) Section 13. Retail Sale Price Representations.
- (f) Section 14. Revocation of Conflicting Regulations.
- (g) Section 15. Effective Date.

(Editor's Note: The requirements that are not adopted from Handbook 130 UPLR are annotated [NOT ADOPTED – § 4511. Exceptions].)

Note: Authority cited: Sections 12027 and 12609, Business and Professions Code. Reference: Sections 12601 and 12609, Business and Professions Code.

§ 4512. Requirements different than Handbook 130 UPLR

The following requirements apply in addition to those contained within the Uniform Packaging and Labeling Regulation in the National Institute of Standards and Technology Handbook 130.

§ 4512.1. Polyethylene Products.

§ 4512.2. Animal Bedding.

§ 4512.3. Enforcement.

(Editor's Note: The requirements that are different than Handbook 130 UPLR are printed in shaded, bordered, and numbered in the 4512 series to differentiate them from the Handbook 130 requirements.)

Note: Authority cited: Sections 12027, 12603, 12609 and 12610, Business and Professions Code. Reference: Sections 12601, 12602, 12603 and 12610, Business and Professions Code.

A. Uniform Packaging and Labeling Regulation

As adopted by
The National Conference on Weights and Measures*

1. Background

The Uniform Packaging and Labeling Regulation was first adopted during the 37th Annual Meeting of the National Conference on Weights and Measures (NCWM) in 1952. Reporting to the Conference, the Committee on Legislation stated:

The National Conference should adopt a model package regulation for the guidance of those states authorized to adopt such a regulation under provisions of their weights and measures laws. Since so much of the work of weights and measures officials in the package field concerns food products, the importance of uniformity between the Federal (FDA) regulations and any model regulations to be adopted by this Conference cannot be overemphasized.

Since its inception, the Uniform Packaging and Labeling Regulation has been continually revised to meet the complexities of an enormous expansion in the packaging industry – an expansion that, in late 1966, brought about the passage of the Fair Packaging and Labeling Act (FPLA). Recognizing the need for compatibility with the Federal Act, in 1968 the Committee on Laws and Regulations of the 53rd Annual Meeting of the National Conference amended the “Model Packaging and Labeling Regulation” (renamed in 1983) to parallel regulations adopted by federal agencies under FPLA. The process of amending and revising this Regulation is a continuing one in order to keep it current with practices in the packaging field and make it compatible with appropriate federal regulations. Amendments and additions since 1971 are noted at the end of each section.

The revision of 1978 provided for the use of the metric system (SI) on labels as well as allowing SI-only labels for those commodities not covered by federal laws or regulations. “SI” means the International System of Units as established in 1960 by the General Conference on Weights and Measures and interpreted or modified for the United States by the Secretary of Commerce. [See the “Interpretation of the International System of Units for the United States” in the “Federal Register” (Volume 73, No. 96, pages 28432 to 28433) for May 16, 2008, and 15 United States Code, Section 205a - 205l “Metric Conversion.” See also NIST Special Publication 330 “The International System of Units (SI)” 2008 edition and NIST Special Publication 811 “Guide for the Use of the International System of Units (SI)” 2008 edition that are available at <https://www.nist.gov/pml/weights-and-measures/publications/metric-publications> or by contacting thesi@nist.gov.] In 1988, Congress amended the Metric Conversion Law to declare that it is the policy of the United States to designate the International System of Units of measurement as the preferred system of weights and measures for U.S. trade and commerce. In 1992, Congress amended the federal FPLA to require the most appropriate units of the SI and the U.S. customary systems of measurement on certain consumer commodities. The 1993 amendments to NIST Handbook 130 require SI and U.S. customary units on certain consumer commodities in accordance with federal laws or regulations. Requirements for labeling in both units of measure were effective February 14, 1994, under FPLA and as specified in Section 15 Effective Date; except as specified in Section 11.32. SI Units, Exemptions for Consumer Commodities.

In 2015, the Federal Trade Commission (FTC) conducted a periodic review of its regulations issued under the FPLA and recently published several revisions which go into effect on December 17, 2015. [See the “Rules, Regulations, Statements of General Policy or Interpretation and Exemptions Under the Fair Packaging and Labeling Act” Final Rule” in the “Federal Register” (Volume 80, No. 221, pages 71686 to 71689) dated Tuesday, November 17, 2015. In response to comments from the NCWM’s Packaging and Labeling Subcommittee, the FTC amended its regulations to clarify that exponents may be used in conjunction with U.S. customary units and recognized that with today’s online resources the location of a business can be readily obtained in lieu of using a printed telephone directory. The FTC amended its regulations on the Declaration of Responsibility to allow the street address to be omitted if it is accessible in a printed or online telephone directory, or any readily accessible, widely published and publicly available resource. In response to a concern that the existing regulation included a limited table of metric conversions, the FTC decided to incorporate the more comprehensive metric conversion tables to provide users with the wide range of factors in NIST Handbook 133 (2015) “Checking the Net Contents of Packaged Goods,” Appendix E, General Tables of Units of Measurements. The FTC also revoked regulations on certain retail price sale representations, since they are no longer used in the marketplace. The regulation was also amended to aid state and local compliance efforts by alerting users of the role of the states in regulating packages that fall outside the scope of the FTC’s purview under the FPLA. (Added 2016)

Nothing contained in this regulation should be construed to supersede any labeling requirement specified in federal law or to require the use of SI units on non-consumer packages.

2. Status of Promulgation

The table beginning on page 10, Section II. Uniformity of Laws and Regulations of Handbook 130 shows the status of adoption of the Uniform Packaging and Labeling Regulation.

**The National Conference on Weights and Measures (NCWM) is supported by the National Institute of Standards and Technology (NIST) in partial implementation of its statutory responsibility for “cooperation with the states in securing uniformity in weights and measures laws and methods of inspection.”*

Preamble

The purpose of this regulation is to provide accurate and adequate information on packages as to the identity and quantity of contents so that purchasers can make price and quantity comparisons.

(Added 1989)

Section 1. Application

This regulation shall apply to packages, but shall not apply to:

- (a) inner wrappings not intended to be individually sold to the customer;
- (b) shipping containers or wrapping used solely for the transportation of any commodities in bulk or in quantity to manufacturers, packers, or processors, or to wholesale or retail distributors, but in no event shall this exclusion apply to packages of consumer or non-consumer commodities as defined herein;

(Added 1971)

- (c) auxiliary containers or outer wrappings used to deliver packages of such commodities to retail customers if such containers or wrappings bear no printed matter pertaining to any particular commodity;
- (d) containers used for retail tray pack displays when the container itself is not intended to be sold (e.g., the tray that is used to display individual envelopes of seasonings, gravies, etc., and the tray itself is not intended to be sold);
- (e) open carriers and transparent wrappers or carriers for containers when the wrappers or carriers do not bear any written, printed, or graphic matter obscuring the label information required by this regulation; or
- (f) packages intended for export to foreign countries. (Amended 1994 and 1998)

Section 2. Definitions

2.1. Package.

Except as modified by Section 1. Application, the term “package,” whether standard package or random package, means any commodity:

- (a) enclosed in a container or wrapped in any manner in advance of wholesale or retail sale; or
- (b) whose weight ^[NOTE 1] or measure has been determined in advance of wholesale or retail sale. An individual item or lot of any commodity on which there is marked a selling price based on an established price per unit of weight or of measure shall be considered a package or packages.

(Amended 1988 and 1991)

NOTE 1: When used in this regulation, the term “weight” means “mass.” (See paragraphs L. “Mass” and “Weight” in Section I. Introduction of NIST Handbook 130 for an explanation of these terms.)

2.2. Consumer Package of Consumer Commodity.

A package that is customarily produced or distributed for sale through retail sales agencies or instrumentalities for consumption or use by individuals for the purposes of personal care or in the performance of services ordinarily rendered in or about the household or in connection with personal possessions.

(Amended 1988 and 1991)

2.3. Non-consumer Package: Package of Non-consumer Commodity.

Any package other than a consumer package, and particularly a package intended solely for industrial or institutional use or for wholesale distribution.

(Amended 1988 and 1991)

2.4. Random Package.

A package that is one of a lot, shipment, or delivery of packages of the same consumer commodity with no fixed pattern of net contents.

(Amended 1988 and 1990)

2.5. Label.

Any written, printed, or graphic matter affixed to, applied to, attached to, blown into, formed, molded into, embossed on, or appearing upon or adjacent to a consumer commodity, or a package containing any consumer commodity, for purposes of branding, identifying, or giving any information with respect to the commodity or to the contents of the package, except that an inspector's tag or other non-promotional matter affixed to or appearing upon a consumer commodity shall not be considered a label requiring the repetition of label information required by this regulation.

(Amended 1988)

2.6. Person.

The term "person" means either singular or plural and shall include any individual, partnership, company, corporation, association, or society.

(Amended 1988)

2.7. Principal Display Panel or Panels.

That part, or those parts, of a label that is, or are, so designed as to most likely be displayed, presented, shown, or examined under normal and customary conditions of display and purchase. Wherever a principal display panel appears more than once on a package, all requirements pertaining to the "principal display panel" shall pertain to all such "principal display panels."

(Amended 1988)

2.8. Multi-unit Package.

A package containing two or more individual packages of the same commodity, in the same quantity, intended to be sold as a multi-unit package, but where the component packages are labeled individually in full compliance with all requirements of this regulation.

(Amended 1988)

2.9. Combination Package.

A package intended for retail sale, containing two or more individual packages or units of dissimilar commodities.

Examples:

- Antiquing or housecleaning kit
- Sponge and cleaner
- Lighter fluid and flints

(Added 1989)

2.10. Variety Package.

A package intended for retail sale, containing two or more individual packages or units of similar, but not identical, commodities. Commodities that are generically the same, but that differ in weight, measure, volume, appearance, or quality, are considered similar, but not identical.

Examples:

- Two sponges of different sizes
- Plastic tableware,
- Consisting of 4 spoons,
- 4 knives, and 4 forks

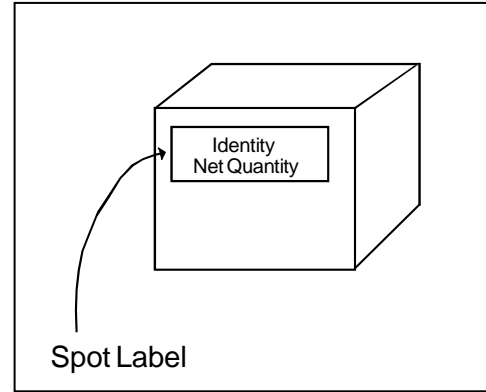
(Added 1989)

2.11. Petroleum Products. – [NOT ADOPTED - § 4511. Exceptions]

2.12. Spot Label.

A spot label is a label clearly defined by means of a border, indentation, or other means that covers only a small portion of the surface of a principal display panel of a package; the entire portion of the principal display panel outside the area of the label contains no printed or graphic matter of any kind. A spot label may contain all required labeling information (identity, responsibility, and net contents), but it must at least indicate the identity and net contents. See Section 11.29. Spot Label for net contents placement exemption for a spot label.

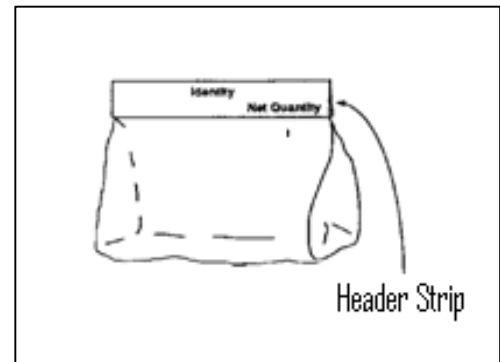
(Added 1990) (Amended 1991)



2.13. Header Strip.

A header label or header strip is a label that is attached across the top of a transparent or opaque bag or other container that bears no other printed or graphic material. See Section 11.30. Header Strip for net contents placement exemptions.

(Added 1990)



2.14. Standard Package.

A package that is one of a lot, shipment, or delivery of packages of the same commodity with identical net contents declarations.

Examples:

- 1 L bottles or 12 fl oz cans of carbonated soda
- 500 g or 5 lb bags of sugar
- 100 m packages of rope

(Added 1991)

2.15. SI or SI Units.

SI or SI Units means the International System of Units as established in 1960 by the General Conference on Weights and Measures and interpreted or modified for the United States by the Secretary of Commerce. See the “Interpretation of the International System of Units for the United States” in the “Federal Register” (Volume 73, No. 96, pages 28432 to 28433) for May 16, 2008, and 15 United States Code, Section 205a – 2051 “Metric Conversion.” See also NIST Special Publication 330, *The International System of Units (SI)*, 2008 edition and NIST Special Publication 811, *Guide for the Use of the International System of Units (SI)*, 2008 edition that are available at www.nist.gov/pml/wmd/ or by contacting thesi@nist.gov.

(Added 1993)

Section 3. Declaration of Identity: Consumer Package

3.1. Declaration of Identity: Consumer Package.

A separate declaration of identity ^[NOTE 2] on a consumer package shall appear on the principal display panel and shall not be misleading or deceptive. The identity shall be in terms of:

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- (a) the name specified in or required by any applicable federal or state law or regulation or, in the absence of this;
- (b) the common or usual name or, in the absence of this;
- (c) the generic name or other appropriate description, including a statement of function (such as “cleaning powder”).

(Amended 1990) (Note added 1986)

NOTE 2: *Section 19.(a) of the Uniform Weights and Measures Law (and 21 CFR 101.100 (b) (3) for non-meat and non-poultry foods) specifically exempts food packages from identity statements if the commodity is a food, other than meat or poultry, that was repackaged in a retail establishment and the food is displayed to the purchaser under either of the following circumstances: “(1) its interstate labeling is clearly in view or with a counter card, sign, or other appropriate device bearing prominently and conspicuously the common or usual name of the food, or (2) the common or usual name of the food is clearly revealed by its appearance.”*

(Added 1986) (Amended 2001)

3.1.1. Parallel Identity Declaration: Consumer Package.

A declaration of the identity on a consumer package shall appear generally parallel to the base on which the package rests as it is designed to be displayed.

Section 4. Declaration of Identity: Non-consumer Package

A declaration of identity ^{NOTE 2} on a non-consumer package shall appear on the outside of a package and shall not be misleading or deceptive. The identity shall be in terms of:

- (a) the name specified in or required by any applicable federal or state law or regulation or, in the absence of this;
- (b) the common or usual name or, in the absence of this;
- (c) the generic name or other appropriate description, including a statement of function (such as “cleaning powder”).

(Amended 1990) (Note added 1986)

Section 5. Declaration of Responsibility: Consumer and Non-consumer Packages

Any package kept, offered, or exposed for sale, or sold at any place other than on the premises where packed shall specify conspicuously on the label of the package the name and address of the manufacturer, packer, or distributor. The name shall be the actual corporate name, or, when not incorporated, the name under which the business is conducted. The address shall include street address, city, state (or country if outside the United States), and ZIP Code (or the mailing code, if any, used in countries other than the United States); however, the street address may be omitted if it is listed in any readily accessible, well-known, widely published, and publicly available resource, including but not limited to a print directory, electronic database, or Web site.

(Amendment effective December 17, 2015)

If a person manufactures, packs, or distributes a commodity at a place other than his principal place of business, the label may state the principal place of business in lieu of the actual place where the commodity was manufactured or packed or is to be distributed, unless such statement would be misleading. Where the commodity is not manufactured by the person whose name appears on the label, the name shall be qualified by a phrase that reveals the connection such person has with such commodity, such as “Manufactured for and packed by _____,” “Distributed by _____,” or any other wording of similar import that expresses the facts.

(Amended 2016)

Section 6. Declaration of Quantity: Consumer Packages

6.1. General.

The International System of Units (SI)^[NOTE 3] known as the metric system and the U.S. customary system of weights and measures are recognized as proper systems to be used in the declaration of quantity. Effective February 14, 1994, appropriate units of both systems shall be presented in a declaration of quantity except as specified in Section 11.32. SI Units, Exemptions for Consumer Commodities and Section 11.33 U.S. Customary Units, Exemptions - Consumer Commodities.

(Amended 1985, 1990, 1993, and 1999)

NOTE 3: Packages subject to this Section and/or the Federal Fair Packaging and Labeling Act shall be labeled in units of the International System of Units (SI) and the U.S. customary system of measure effective February 14, 1994, [except for seed (see Section 10.10. Packaged Seed) and camera film and recording tape (see Section 11.22. Camera Film, Video Recording Tape, Audio Recording Tape and Other Image and Audio Recording Media Intended for Retail Sale and Consumer Use), and as specified in Section 11.32. SI Units, Exemptions - Consumer Commodities]. SI units may appear first.

(Added 1982) (Amended 1990 and 1993)

6.2. Largest Whole Unit.

Where this regulation requires that the quantity declaration be in terms of the largest whole unit, the declaration shall, with respect to a particular package, be in terms of the largest whole unit of weight or measure with any remainder expressed (following the requirements of Section 6.5.2. (a) Fractions and Section 6.11. Fractions):

- (a) **SI Units.** – in decimal fractions of such largest whole unit.
- (b) **U.S. Customary Units.**
 - (1) in common or decimal fractions of such largest whole unit; or
 - (2) in the next smaller whole unit or units with any further remainder in terms of common or decimal fractions of the smallest unit present in the quantity declaration.

6.3. Net Quantity.

A declaration of net quantity of the commodity in the package, exclusive of wrappers and any other material packed with such commodity (except as noted in Section 10.3. Aerosols and Other Pre-pressurized Containers Dispensing Product Under Pressure), shall appear on the principal display panel of a consumer package and, unless otherwise specified in this regulation (see Sections 6.6. Prescribed Units, SI, through 6.9. Bi-dimensional Commodities), shall be in terms of the largest whole unit.

6.3.1. Use of “Net Mass” or “Net Weight.”

A quantity declaration may stand alone [e.g., “200 g (7 oz)” or “1 lb (453 g)”] or may include the term “net mass” or “net weight” either preceding or following the declaration. The term “net” by itself may be used on food labels. However, the quantity of contents shall always declare the net quantity of contents even when such terms are not used.

(Amended 1993)

6.3.2. Lines of Print or Type.

A declaration of quantity may appear on one or more lines of print or type.

(Amended 1982)

6.4. Terms: Weight, Measure, Volume, or Count.

The declaration of the quantity shall be expressed in terms of Table 6.4. Weight, Measure, Volume or Count:

Table 6.4. Weight, Measure, Volume, or Count	
If the commodity is:	The declaration of the quantity of a particular commodity shall be expressed in terms of:
(a) solid, semisolid, viscous, or a mixture of solid and liquid	weight or mass
(b) liquid	fluid volume measure
(c) dry	dry measure
(d) or labeled by linear measure or area	linear measure or area
(e) or labeled by numerical units (count)	numerical count

However, if there exists a firmly established general consumer usage and trade custom with respect to the terms used in expressing a declaration of quantity of a particular commodity, such a declaration of quantity may be expressed in its traditional terms, provided such traditional declaration gives accurate and adequate information as to the quantity of the commodity. Any net content statement that does not permit price and quantity comparisons is forbidden.

(Amended 1989 and 2015)

6.4.1. Combination Declaration.

- (a) A declaration of quantity in terms of weight or volume shall be combined with appropriate declarations of the measure, count, and size of the individual units unless a declaration of weight alone is fully informative.
- (b) A declaration of quantity in terms of measure shall be combined with appropriate declarations of the weight, volume, count, and size of the individual units unless a declaration of measure alone is fully informative.
- (c) A declaration of quantity in terms of count shall be combined with appropriate declarations of the weight, volume, measure, and size of the individual units unless a declaration of count alone is fully informative.

(Added 1971)

6.5. SI Units: Mass, Measure.

[NOTE 3] – A declaration of quantity shall be expressed in terms of Table 6.5. SI Units: Mass, Measure, and the requirements in 6.5. (f), (g), and (h):

Table 6.5. SI Units: Mass, Measure	
If a declaration of quantity is in units of:	The units shall be in:
(a) mass	kilogram, gram, or milligram
(b) liquid measure	liter or milliliter and shall express the volume at 20 °C, except for: <ul style="list-style-type: none"> (1) petroleum products or distilled spirits for which the declaration shall express the volume at 15.6 °C; (2) a commodity that is normally sold and consumed while frozen for which the declaration shall express the volume at the frozen temperature; and

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	(3) malt beverages or a commodity that must be maintained in the refrigerated state for which the declaration shall express the volume at 4 °C.
(c) linear measure	meter, centimeter, or millimeter
(d) area measure	square meter, square decimeter, square centimeter, or square millimeter
(e) volume other than liquid measure	liter or milliliter, except that units cubic meter and cubic centimeter shall be used only when specifically designated as a method of sale

- (f) Rule of 1000. – The selected multiple or submultiple prefixes for SI units shall result in numerical values between 1 and 1000. This rule allows centimeters or millimeters to be used where a length declaration is less than 100 centimeters.

Examples:

500 g, not 0.5 kg
 1.96 kg, not 1960 g 750 ml, not 0.75 L
 750 mm or 75 cm, not 0.75 m
 (Added 1993)

- (g) SI declarations should be shown in three digits except where the quantity is below 100 grams, milliliters, centimeters, square centimeters, or cubic centimeters, where it may be shown in two digits. In either case, any final zero appearing to the right of the decimal point need not be shown; and

(Added 1993)

- (h) the declaration of net quantity of contents shall not be expressed in mixed units.

Example:

1.5 kg, not 1 kg 500 g
 (Added 1993)

(Amended 2015)

6.5.1. Symbols.

Any of the following symbols for SI units, and none other, may be employed in the quantity statement on a package of commodity:

centimeter	cm	cubic meter	m ³
cubic centimeter	cm ³	kilogram	kg
meter	m	gram	g
milligram	mg	millimeter	mm
liter	L or l	square meter	m ²
milliliter	ml or mL	cubic decimeter	dm ³
square centimeter	cm ²	square decimeter	dm ²
micrometer	µm	microgram	µg or mcg

- (a) Symbols ^[NOTE 4], except for liter, are not capitalized unless the unit is derived from a proper name. Periods shall not be used after the symbol. Symbols shall always be written in the singular form. Adding “s” to an SI symbol to express the plural of the symbol is prohibited.
- (b) The “L” symbol and the “ml” symbol are preferred; however, the “l” symbol for liter and “mL” symbol for milliliter are permitted.

(Amended 1980 and 1993)

NOTE 4: The “e” mark shall not be considered to be a qualifying word or phrase and may be used as part of the statement of the net quantity of contents where warranted. When used, the “e” mark shall be at least 3 mm

(approximately 1/8 in) in height. The term “e” mark refers to the symbol “e” used in connection with the quantity declarations on labels of some consumer commodities marketed primarily in the European Union (EU) and South Africa. The “e” mark constitutes a representation by the packer or importer that the package to which it is applied has been filled in accordance with the average system of quantity specified by the EU. The average system is a method of declaring package fill in the EU and other countries of the world, including the United States.
(Added 1993)

6.5.2. Fractions and Prefixes.

- (a) **Fractions:** An SI statement in a declaration of net quantity of contents of any consumer commodity may contain only decimal fractions.
- (b) **Prefixes:** The following chart indicates SI prefixes that may be used on a broad range of consumer commodity labels to form multiples and submultiples of SI units:

Prefix	Symbol	Multiplying Factor*
kilo-	k	$\times 10^3$
deka-**	da	$\times 10$
deci-**	d	$\times 10^{-1}$
centi-***	c	$\times 10^{-2}$
milli-	m	$\times 10^{-3}$
Micro-****	μ	$\times 10^{-6}$

* $10^2 = 100$; $10^3 = 1000$; $10^{-1} = 0.1$; $10^{-2} = 0.01$
 Thus, 2 kg = 2×1000 g = 2000 g and 3 cm = 3×0.01 m = 0.03 m
 **Not permitted on food labels.
 ***Should only be used with “meter.”
 ****Shall only be used for measurements less than 1 mm.

(Amended 1993)

6.6. Prescribed Units, SI. [NOTE 3]

6.6.1. Less than 1 Meter, 1 Square Meter, 1 Kilogram, 1 Cubic Meter, or 1 Liter.

The declaration of quantity shall be expressed as follows:

- (a) length measure of less than 1 meter: in centimeters or millimeters;
(Amended 1979)
- (b) area measure of less than 1 m²: in square decimeters and decimal fractions of a square decimeter or in square centimeters and decimal fractions of a square centimeter;
- (c) mass of less than 1 kg: in grams and decimal fractions of a gram, but if less than 1 g, then in milligrams;
- (d) liquid or dry measure of less than 1 L: in milliliters; and
- (e) cubic measure less than 1 m³: in cubic centimeters or cubic decimeters (liters);
(Added 1993)

Provided the quantity declaration appearing on a random mass package may be expressed in units of decimal fractions of the largest appropriate unit, the fraction being carried out to not more than three decimal places.

(Amended 1980 and 1993)

6.6.2. One Meter, 1 Square Meter, 1 Kilogram, 1 Liter, 1 Cubic Meter, or More.

In the case of:

- (a) length measure of 1 m or more: in meters and decimal fractions to not more than three places;
- (b) area measure of 1 m² or more: in square meters and decimal fractions to not more than three places;
- (c) mass of 1 kg or more: in kilograms and decimal fractions to not more than three places;

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- (d) liquid or dry measure of 1 L or more: in liters and decimal fractions to not more than three places; and (Added 1986) (Amended 1993)
- (e) cubic measure of 1 m³ or more: in cubic meters and decimal fractions to not more than three places. (Added 1993)

6.7. U.S. Customary Units: Weight, Measure.

A declaration of quantity shall be expressed in terms of Table 6.7. U.S. Customary Units: Weight, Measure:

Table 6.7. U.S. Customary Units: Weight, Measure	
If a declaration of quantity is in units	The unit shall be in:
(a) weight	Avoirdupois pound or ounce
(b) liquid measure	U.S. Gallon of 231 in ³ or liquid quart, liquid pint, or fluid-ounce subdivisions of the gallon and shall express the volume at 68 °F, except in case of: <ul style="list-style-type: none"> (1) petroleum products or distilled spirits for which the declaration shall express the volume at 60 °F; (2) a commodity that is normally sold and consumed while frozen for which the declaration shall express the volume at the frozen temperature; (3) a commodity that must be maintained in the refrigerated state for which the declaration shall express the volume at 40 °F; and (4) malt beverages for which the declaration shall express the volume at 39.1 °F.
(c) linear measure	Yard, foot, or inch
(d) area measure	Square yard, square foot, or cubic inch
(e) volume measure	Cubic yard, cubic foot, or cubic inch
(f) dry measure	U.S. bushel of 2150.42 in ³ , or peck, dry quart, and dry pint subdivisions of the bushel

(Amended 2015)

6.7.1. Symbols and Abbreviations.

Any of the following symbols and abbreviations, and none other, shall be employed in the quantity statement on a package of commodity:

avoirdupois	avdp	ounce	oz
piece	pc	count	ct
pint	pt	cubic	cu
pound	lb	each	ea
feet or foot	ft	quart	qt
fluid	fl	square	sq
gallon	gal	weight	wt
inch	in	yard	yd
liquid	liq	drained	dr
diameter	dia		

A period should not be used after the abbreviation. Abbreviations should be written in singular form; and “s” should not be added to express the plural. (For example, “oz” is the symbol for both “ounce” and “ounces.”) Both upper and lower case letters and exponents are acceptable.

(Amendment effective 12/17/2015.)

(Added 1974) (Amended 1980, 1990, 1993, and 2016)

6.7.2. Units of Two or More Meanings.

When the term “ounce” is employed in a declaration of liquid quantity, the declaration shall identify the particular meaning of the term by the use of the term “fluid;” however, such distinction may be omitted when, by association of terms (for example, as in “1 pint 4 ounces”), the proper meaning is obvious. Whenever the declaration of quantity is in terms of the dry pint or dry quart, the declaration shall include the word “dry.”

(Amended 1982)

6.8. Prescribed Units, U.S. Customary System.**6.8.1. Less than 1 foot, 1 square foot, 1 pound, or 1 pint.**

The declaration of quantity shall be expressed in the following terms:

- (a) in the case of length measure of less than 1 ft, in inches and fractions of inches;
- (b) in the case of area measure of less than 1 ft², in square inches and fractions of square inches;
- (c) in the case of weight of less than 1 lb, in ounces and fractions of ounces; and
- (d) in the case of liquid measure of less than 1 pt, in fluid ounces and fractions of fluid ounces, provided, the quantity declaration appearing on a random package may be expressed in terms of decimal fractions of the largest appropriate unit, the fraction being carried out to not more than three decimal places.

(Amended 1984)

6.8.2. One Foot, 1 Square Foot, 1 Pound, 1 Pint, 1 Gallon, or More.

The declaration of quantity shall be expressed in the following terms (see Section 6.2. Largest Whole Unit and Section 6.11. Fractions):

- (a) **Linear Measure.** – If 1 ft or more, expressed in terms of the largest whole unit (a yard or a foot) with any remainder expressed in inches and fractions of the inch or in fractions of the foot or yard, except that it shall be optional to include a statement of length in terms of inches.
- (b) **Area Measure.**
 - (1) If 1 ft² or more, but less than 4 ft², expressed in square feet with any remainder expressed in square inches and fractions of a square inch or in fractions of a square foot; and
 - (2) If 4 ft² or more, expressed in terms of the largest whole unit (e.g., square yards or square feet) with any remainder expressed in square inches and fractions of a square inch or in fractions of the square foot or

square yard.

- (c) **Weight.** – If 1 lb or more, expressed in terms of the largest whole unit with any remainder expressed in ounces and fractions of an ounce or in fractions of the pound.

(d) **Liquid Volume.**

(1) If 1 pt or more, but less than 1 gal, expressed in the largest whole unit (quarts, quarts and pints, or pints, as appropriate) with any remainder expressed in fluid ounces or fractions of the pint or quart, except that 2 qt may be declared as $\frac{1}{2}$ gal, and it shall be optional to include an additional expression of net quantity in fluid ounces; or if 1 gal or more, expressed in terms of the largest whole unit (gallons followed by fractions of a gallon or by the next smaller whole unit or units [for example, quarts and pints]) with any remainder expressed in fluid ounces or fractions of the pint or quart, except that it shall be optional to include an additional expression of net quantity in fluid ounces.

- (e) **Dry Measure.** – If 1 dry pt or more, expressed in terms of the largest whole unit with the remainder expressed in fractions of a dry pint, dry quart, peck, or bushel, provided the quantity declaration on a random package may be expressed in decimal fractions of the largest appropriate unit carried out to not more than three decimal places.

(Amended 1993)

6.9. Bi-dimensional Commodities.

For bi-dimensional commodities (including roll-type commodities) the quantity declaration shall be expressed in both SI and U. S. Customary units of measurement as follows:

- (a) if the area is less than 929 cm^2 (1 ft^2), in terms of length and width (expressed in the largest whole unit for SI and in linear inches and fractions of linear inches for U.S. customary);

Example:

$20.3 \text{ cm} \times 25.4 \text{ cm}$ ($8 \text{ in} \times 10 \text{ in}$)

- (b) if the area is at least 929 cm^2 (1 ft^2), but less than 37.1 dm^2 (4 ft^2), in terms of area (expressed in the largest whole unit for SI and in square inches for U.S. customary), followed by a declaration of the length and width in terms of the largest whole unit:

Example:

31 dm^2 ($49 \text{ cm} \times 64 \text{ cm}$) 3.36 ft^2 ($1.6 \text{ ft} \times 2.1 \text{ ft}$), provided:

- (1) bi-dimensional commodities having a width of 10 cm (4 in) or less, the declaration of net quantity shall be expressed in terms of width and length in linear measure; no declaration of area is required;
- (2) an U.S. customary dimension of less than 2 ft may be stated in inches;
- (3) commodities consisting of usable individual units (e.g., paper napkins) require a declaration of unit area but not a declaration of total area of all such units (except roll-type commodities with individual usable units created by perforations, for which see Section 6.10. Count: Ply); and
- (4) U.S. customary declarations may include after the statement of the linear dimensions in the largest whole unit a parenthetical declaration of the same dimensions in inches.

Example:

25 ft^2 ($12 \text{ in} \times 8.33 \text{ yd}$) ($12 \text{ in} \times 300 \text{ in}$)

- (c) if the area is 37.1 dm^2 (4 ft^2) or more, in terms of area (expressed in the largest whole unit for SI and in square feet for U.S. customary), followed by a declaration of the length and width, in terms of the largest whole unit, provided:

- (1) no declaration of area is required for a bi-dimensional commodity with a width of 10 cm (4 in) or less;
- (2) bi-dimensional commodities with a width of 10 cm (4 in) or less, the U.S. customary statement of width shall be expressed in terms of linear inches and fractions thereof, and length shall be expressed in the largest whole unit (yard or foot) with any remainder in terms of fractions of the yard or foot, except that it shall be optional to express the length in the largest whole unit followed by a statement of length in

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inches or to express the length in inches followed by a statement of length in the largest whole unit;

Examples:

- 5 cm × 9.14 m (2 in × 10 yd)
- 5 cm × 9.14 m (2 in × 10 yd) (360 in)
- 5 cm × 9.14 m (2 in × 360 in) (10 yd)

- (3) an U.S. customary dimension of less than 2 ft may be stated in inches; and
- (d) no declaration of area is required for commodities for which the length and width measurements are critical in terms of end use (such as wallpaper border) if such commodities clearly present the length and width measurements on the label.

6.10. Count: Ply.

If the commodity is in individually usable units of one or more components or plies, the quantity declaration shall, in addition to complying with other applicable quantity declaration requirements of this regulation, include the number of plies and total number of usable units.

Roll type commodities, when perforated so as to identify individual usable units, shall not be deemed to be made up of usable units; however, such roll type commodities shall be labeled in terms of:

- (a) total area measurement;
- (b) number of plies;
- (c) count of usable units; and
- (d) dimensions of a single usable unit.

(Amended 1988)

6.11. Fractions.

- (a) **U.S. Customary:** An U.S. customary unit statement of net quantity of contents of any consumer commodity may contain common or decimal fractions. A common fraction shall be in terms of halves, quarters, eighths, sixteenths, or thirty-seconds, except that:
 - (1) if there exists a firmly established general consumer usage and trade custom of employing different common fractions in the net quantity declaration of a particular commodity, they may be employed; and
 - (2) if linear measurements are required in terms of yards or feet, common fractions may be in terms of thirds.
- (b) **Common fractions:** A common fraction shall be reduced to its lowest term.

Example:

$\frac{2}{4}$ becomes $\frac{1}{2}$

- (c) **Decimal fractions:** A decimal fraction shall not be carried out to more than three places.

(Amended 1986 and 1993)

6.12. Supplementary Quantity Declarations.

The required quantity declaration may be supplemented by one or more declarations of weight, measure, or count, such declaration appearing other than on a principal display panel. Such supplemental statement of quantity of contents shall not include any term qualifying a unit of weight, measure, or count that tends to exaggerate the amount of commodity contained in the package (e.g., “giant” quart, “larger” liter, “full” gallon, “when packed,” “minimum,” or words of similar import).

6.13. Rounding. [NOT ADOPTED - § 4511. Exceptions]

6.14. Qualification of Declaration Prohibited.

In no case shall any declaration of quantity be qualified by the addition of the words “when packed,” “minimum,” or “not less than” or any words of similar import (e.g., “approximately”), nor shall any unit of weight, measure, or count be qualified by any term (such as “jumbo,” “giant,” “full,” or the like) that tends to exaggerate the amount of commodity.

(Amended 1998)

6.15. Character of Declaration: Average.

The average quantity of contents in the packages of a particular lot, shipment, or delivery shall at least equal the declared quantity, and no unreasonable shortage in any package shall be permitted even though overages in other packages in the same shipment, delivery, or lot compensate for such shortage.

(Added 1981)

6.16. Random Packages.

A random weight package must bear a label conspicuously declaring:

- (a) the net weight;
- (b) unit price; and
- (c) the total price.

In the case of a random package packed at one place for subsequent sale at another, neither the price per unit of weight nor the total selling price need appear on the package, provided the package label includes both such prices at the time it is offered or exposed for sale at retail.

(Added 1999)

Section 7. Declaration of Quantity: Non-consumer Packages

7.1. General.

The SI and U.S. customary systems of weights and measures are recognized as proper systems to be used in the declaration of quantity. Units of both systems may be combined in a dual declaration of quantity. ^[NOTE 6] (See Section 6.3. Net Quantity, and Section 6.3.1. Use of “Net Mass” or “Net Weight.”)

NOTE 6: Although non-consumer packages under this Regulation may bear SI declarations only, this Regulation should not be construed to supersede any labeling requirement specified in federal law.

7.2. Location.

A non-consumer package shall bear on the outside a declaration of the net quantity of contents. Such declaration shall be in terms of the largest whole unit (see Section 6.2. Largest Whole Unit; for small packages, see Section 11.16. Small Packages).

7.3. Terms: Weight, Liquid Measure, Dry Measure, or Count.

The declaration of the quantity of a particular commodity shall be expressed in terms of liquid measure if the commodity is liquid, in terms of dry measure if the commodity is dry, in terms of weight if the commodity is solid, semisolid, viscous, or a mixture of solid and liquid, or in terms of numerical count. However, if there exists a firmly established general consumer usage and trade custom with respect to the terms used in expressing a declaration of quantity of a particular commodity, such declaration of quantity may be expressed in its traditional terms if such traditional declaration gives accurate and adequate information as to the quantity of the commodity.

7.4. SI Units: Mass, Measure. – A declaration of quantity:

- (a) in units of mass shall be in terms of the kilogram, gram, or milligram;
- (b) in units of liquid measure shall be in terms of the liter or milliliter, and shall express the volume at 20 °C, except in the case of petroleum products or distilled spirits, for which the declaration shall express the volume at 15.6 °C, and except also in the case of a commodity that is normally sold and consumed while frozen, for which the declaration shall express the volume at the frozen temperature, and except also in the case of malt beverages or a commodity that is normally sold in the refrigerated state, for which the declaration shall express the volume at 4 °C;

(Amended 1985)

- (c) in units of linear measure shall be in terms of the meter, centimeter, or millimeter;

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- (d) in units of area measure shall be in terms of the square meter, square decimeter, square centimeter or square millimeter;
- (e) in units of volume other than liquid measure shall be in terms of the liter and milliliter, except that the terms cubic meter, cubic decimeter, and cubic centimeter will be used only when specifically designated as a method of sale;
- (f) Rule of 1000. – The selected multiple or submultiple prefixes for SI units shall result in numerical values between 1 and 1000. This rule allows centimeters or millimeters to be used where a length declaration is less than 100 centimeters;

Examples:

500 g, not 0.5 kg
 1.96 kg, not 1960 g 750 ml, not 0.75 L
 750 mm or 75 cm, not 0.75 m

(Added 1993)

- (g) SI declarations should be shown in three digits except where the quantity is below 100 grams, milliliters, centimeters, square centimeters, or cubic centimeters where it can be shown in two digits. In either case, any final zero appearing to the right of the decimal point need not be shown; and

(Added 1993)

- (h) the declaration of net quantity of contents shall not be expressed in mixed units.

Example:

1.5 kg, not 1 kg 500 g

7.4.1. Symbols.

Only those symbols as detailed in Section 6.5.1. Symbols, and none other, may be employed in the quantity statement on a package of commodity.

7.5. U.S. Customary Units: Weight, Measure.

A declaration of quantity:

- (a) in units of weight shall be in terms of the avoirdupois pound or ounce;
- (b) in units of liquid measure shall be in terms of the United States gallon of 231 cubic inches or liquid quart, liquid pint, or fluid ounce subdivisions of the gallon and shall express the volume at 68 °F, except in the case of petroleum products or distilled spirits, for which the declaration shall express the volume at 60 °F, and except also in the case of a commodity that is normally sold and consumed while frozen, for which the declaration shall express the volume at the frozen temperature, and except also in the case of a commodity that is normally sold in the refrigerated state, for which the declaration shall express the volume at 40 °F, and except also in the case of malt beverages, for which the declaration shall express the volume at 39.1 °F;

(Amended 1985)

- (c) in units of linear measure shall be in terms of the yard, foot, or inch;
- (d) in units of area measure shall be in terms of the square yard, square foot, or square inch;
- (e) in units of volume measure shall be in terms of the cubic yard, cubic foot, or cubic inch; and
- (f) in units of dry measure, shall be in terms of the United States bushel of 2150.42 in³, or peck, dry quart, and dry pint subdivisions of the bushel.

7.5.1. Symbols and Abbreviations.

Any generally accepted symbol and abbreviation of a unit name may be employed in the quantity statement on a package of commodity. (For commonly accepted symbols and abbreviations, see Section 6.7.1. Symbols and Abbreviations.)

7.6. Character of Declaration: Average. – [NOT ADOPTED - § 4511. Exceptions]

Section 8. Prominence and Placement: Consumer Packages

8.1. General.

All information required to appear on a consumer package shall appear thereon in the English language and shall be prominent, definite, plain, and conspicuous as to size and style of letters and numbers and as to color of letters and numbers in contrast to color of background. Any required information that is either in hand lettering or hand script shall be entirely clear and equal to printing in legibility.

8.1.1. Location.

The declaration or declarations of quantity of the contents of a package shall appear in the bottom 30 % of the principal display panel or panels. For cylindrical containers, see also

Section 10.7. Cylindrical Containers for additional requirements. For small packages, see Section 11.16. Small Packages.

(Amended 1975)

8.1.2. Style of Type or Lettering.

The declaration or declarations of quantity shall be in such a style of type or lettering as to be boldly, clearly, and conspicuously presented with respect to other type, lettering, or graphic material on the package, except that a declaration of net quantity blown, formed, or molded on a glass or plastic surface is permissible when all label information is blown, formed, or molded on the surface.

8.1.3. Color Contrast.

The declaration or declarations of quantity shall be in a color that contrasts conspicuously with its background, except that a declaration of net quantity blown, formed, or molded on a glass or plastic surface shall not be required to be presented in a contrasting color if no required label information is on the surface in a contrasting color.

8.1.4. Free Area.

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

- (a) above and below, by a space equal to at least the height of the lettering in the declaration; and
- (b) to the left and right, by a space equal to twice the width of the letter "N" of the style and size of type used in the declaration.

8.1.5. Parallel Quantity Declaration.

The quantity declaration shall be presented in such a manner as to be generally parallel to the declaration of identity and to the base on which the package rests as it is designed to be displayed.

8.2. Calculation of Area of Principal Display Panel for Purposes of Type Size.

The area of the principal display panel shall be:

- (a) in the case of a rectangular container, one entire side that properly can be considered to be the principal display panel, the product of the height times the width of that side;

For Figure 3, the area of the principal display panel is 20 cm (8 in) × 15 cm (6 in) = 300 cm² (48 in²).

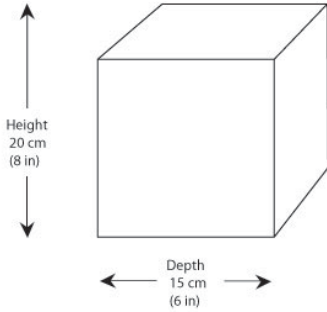


Figure 3. Calculation of the Area of the Principal Display Area of a Rectangular Container

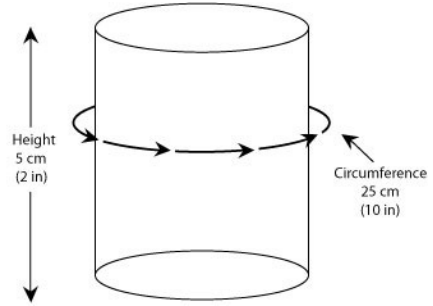


Figure 4. Calculation of the Area of the Principal Display Area of a Cylindrical Container

- (b) in the case of a cylindrical or nearly cylindrical container, 40 % of the product of the height of the container times the circumference;

For Figure 4, the area of the principal display panel is:

$$25 \text{ cm (10 in)} \times 5 \text{ cm (2 in)} = 125 \text{ cm (20 in}^2) \times 0.40 = 50 \text{ cm}^2 (8 \text{ in}^2)$$

(see also Section 10.7. Cylindrical Containers).

The area of the principal display panel is the same in both examples. The declaration of net quantity of contents must be of the same height in both cases. It is not the size of the label that is used to determine the minimum type size of the quantity statement, but the size of the surface of the package exposed to view to the customer. The package on the right side of the figure has a spot label (see Section 2.12. Spot Label and Section 11.29. Spot Label); and

- (c) in the case of any other shaped container, 40 % of the total surface of the container, unless such container presents an obvious principal display panel (e.g., the top of a triangular or circular package of cheese, or the top of a can of shoe polish), in which event the area shall consist of the entire such surface.

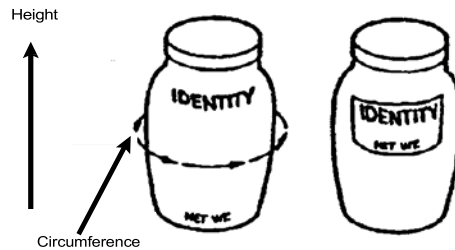


Figure 5. Other Shaped Containers.

Determination of the principal display panel shall exclude tops, bottoms, flanges at tops and bottoms of cans, and shoulders and necks of bottles or jars.

8.2.1. Minimum Height of Numbers and Letters.

The height of any letter or number in the required quantity declaration shall be not less than that shown in Table 1 with respect to the area of the panel, and the height of each number of a common fraction shall meet one-half the minimum height standards. When upper and lowercase or all lowercase letters are used, it is the lowercase “o” or its equivalent that shall meet the minimum height requirement. When upper and lowercase or all lowercase letters are used in SI symbols, it is the uppercase “L,” lowercase “d,” or their equivalent in the print or type that shall meet the minimum height requirement. However, no letter shall be less than 1.6 mm ($1/16$ in) in height. Other letters and exponents must be presented in the same type style and in proportion to the type size used.

(Amended 1993)

8.2.3. Numbers and Letters: Proportion.

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

Table 1. Minimum Height of Numbers and Letters		
Area of Principal Display Panel	Minimum Height of Numbers and Letters	Minimum Height; Label Information Blown, Formed, or Molded on Surface of Container
$\leq 32 \text{ cm}^2 (5 \text{ in}^2)$	1.6 mm ($1/16$ in)	3.2 mm ($1/8$ in)
$> 32 \text{ cm}^2 (5 \text{ in}^2) \leq 161 \text{ cm}^2 (25 \text{ in}^2)$	3.2 mm ($1/8$ in)	4.8 mm ($3/16$ in)
$> 161 \text{ cm}^2 (25 \text{ in}^2) \leq 645 \text{ cm}^2 (100 \text{ in}^2)$	4.8 mm ($3/16$ in)	6.4 mm ($1/4$ in)
$> 645 \text{ cm}^2 (100 \text{ in}^2) \leq 2581 \text{ cm}^2 (400 \text{ in}^2)$	6.4 mm ($1/4$ in)	7.9 mm ($5/16$ in)
$> 2581 \text{ cm}^2 (400 \text{ in}^2)$	12.7 mm ($1/2$ in)	14.3 mm ($9/16$ in)

Symbols: \leq means less than or equal to; $<$ means less than; $>$ means greater than.
NOTE: The type size requirements specified in this table do not apply to the “e” mark [NOTE 4].

Section 9. Prominence and Placement: Non-consumer Packages

9.1. General.

All information required to appear on a non-consumer package shall be definitely and clearly stated thereon in the English language. Any required information that is either in hand lettering or hand script shall be entirely clear and equal to printing in legibility.

Section 10. Requirements: Specific Consumer Commodities, Non-consumer Commodities, Packages, Containers

(Title amended 1979)

10.1. Display Card Package.

For an individual package affixed to a display card, or for a commodity and display card together comprising a package, the type size of the quantity declaration is governed by the dimensions of the display card.

10.2. Eggs.

When cartons containing 12 eggs have been designed so as to permit division in half by the retail purchaser, the required quantity declaration shall be so positioned as to have its context destroyed when the carton is divided.

10.3. Aerosols and Other Pre-pressurized Containers Dispensing Product Under Pressure.

The declaration of quantity on an aerosol and on other pre-pressurized containers dispensing products under pressure shall disclose the net quantity of the commodity (including propellant, where applicable) in terms of weight that will be expelled when the instructions for use as shown on the container are followed.

Note: Enforceable on packages using bag-on-valve (BOV) technology after January 1, 2018.

(Amended 2014)

10.4. Multi-unit Packages.

Any package containing more than one individual “commodity in package form” [NOTE 7] (see Section 2.1. Package) of the same commodity shall bear on the outside of the package a declaration of:

- (a) the number of individual units;
- (b) the quantity of each individual unit; and
- (c) the total quantity of the contents of the multi-unit package.

Example:

Soap bars, 6 Bars, Net Wt 100 g (3.53 oz) each
Total Net Wt 600 g (1.32 lb).

The term “total” or the phrase “total contents” may precede the quantity declaration.

A multi-unit package containing unlabeled individual packages which are not intended for retail sale separate from the multi-unit package may contain, in lieu of the requirements of section (a), a declaration of quantity of contents expressing the total quantity of the multi-unit package without regard for inner packaging. For such multi-unit packages it shall be optional to include a statement of the number of individual packages when such a statement is not otherwise required by the regulations.

Examples:

Deodorant Cakes –

5 cakes, Net Wt 113 g (4 oz) each, Total Net Wt 566 g (1.25 lb); or 5 cakes, Total Net Wt 566 g (1 lb 4 oz)

Soap Packets –

10 packets, Net Wt 56.6 g (2 oz) each, Total Net Wt 566 g (1.25 lb); or Net Wt 566 g (1 lb 4 oz); or
10 packets, Total Net Wt 566 g (1 lb 4 oz)

(Amended 1993)

NOTE 7: For foods, a “multi-unit” package means a package containing two or more individually packaged units of the identical commodity in the same quantity, intended to be sold as part of the multi-unit package but labeled to be individually sold in full compliance with this regulation. Open multi-unit retail food packages under the authority of the FDA or the USDA that do not obscure the number of units or prevent examination of the labeling on each of the individual units are not required to declare the number of individual units or the total quantity of contents of the multi-unit package if the labeling of each individual unit complies with requirements so that it is capable of being sold individually. (See also Section 11.11. Soft Drink Bottles and Section 11.12. Multi-Unit Soft-Drink Bottles.)

(Added 1984)

10.5. Combination Packages.

A combination package is a package intended for retail sale, containing two or more individual packages or units of dissimilar commodities. The declaration of net quantity for a combination package shall contain an expression of weight, volume, measure, or count or a combination thereof, as appropriate, for each individual package or unit, provided the quantity statements for identical packages or units shall be combined. This section does not apply to food or other commodities subject to the Federal Food, Drug, and Cosmetic Act (21 USC).

Examples:

Lighter Fluid and Flints –

2 cans lighter fluid – each 236 ml (8 fl oz) 1 package – 8 flints

Sponges and Cleaner –

2 sponges – each 10 cm × 15 cm × 2.5 cm (4 in × 6 in × 1 in) 1 box cleaner – Net Mass 170 g (6 oz)

Picnic Pack –

20 spoons, 10 knives, and 10 forks

10 2-ply napkins 25 cm × 25 cm (10 in × 10 in)

10 cups – 177 ml (6 fl oz)

(Amended 1993)

10.6. Variety Packages.

A variety package is a package intended for retail sale, containing two or more individual packages or units of similar but not identical commodities. Commodities that are generically the same but that differ in weight, measure, volume, appearance, or quality are considered similar but not identical. This section does not apply to foods or other commodities subject to the Federal Food, Drug, and Cosmetic Act (21 USC). The declaration of net quantity for a variety package will be expressed as follows:

- (a) The number of units for each identical commodity followed by the weight, volume, or measure of that commodity;
- (b) The total quantity by weight, volume, measure, and count, as appropriate, of the variety package. The statement of total quantity shall appear as the last item in the declaration of net quantity and shall not be of greater prominence than other terms used.

Examples:

Sponges –

11 sponges 11 cm × 20.3 cm × 1.9 cm (4 in × 8 in × ¾ in) 14 sponges 5.7 cm × 10 cm × 1.2 cm (2¼ in × 4 in × ½ in) Total: 25 sponges

Soap –

2 soap bars 85 g (3 oz) ea

1 soap bar 142 g (5 oz)

Total: 3 soap bars 312 g (11 oz)

Examples Cont.

Liquid Shoe Polish –
 1 brown 89 ml (3 fl oz)
 1 black 89 ml (3 fl oz)
 1 white 148 ml (5 fl oz)
 Total: 326 ml (11 fl oz)

Picnic Ware – 34 spoons
 33 forks
 33 knives
 Total: 100 pieces

(Amended 1993)

When individual units in a variety package are either packaged or labeled and are intended for retail sale as individual units, each unit shall be labeled in compliance with the applicable sections of this regulation.

10.7. Cylindrical Containers.

In the case of cylindrical or nearly cylindrical containers, information required to appear on the principal display panel shall appear within that 40 % of the circumference which is most likely to be displayed, presented, shown, or examined under customary conditions of display for retail sale.

10.8. Measurement of Container-Type Commodities, How Expressed.**10.8.1. General.**

Commodities designated and sold at retail to be used as containers for other materials or objects, such as bags, cups, boxes, and pans, shall be labeled with the declaration of net quantity as follows:

- (a) For bag-type commodities, in terms of count followed by linear dimensions of the bag (whether packaged in a perforated roll or otherwise). The linear dimensions shall be expressed:
 - (1) in SI units: in millimeters or centimeters, except that a dimension of 1 meter or more will be expressed in meters with the remainder in terms of decimal fractions of the meter; and
 - (2) in U.S. customary units: in inches, except that a dimension of 2 ft or more will be expressed in feet with any remainder in terms of inches or common or decimal fractions of the foot.
- (b) When the unit bag is characterized by two dimensions because of the absence of a gusset, the width and length will be stated.

Examples:

25 bags, 12.7 cm × 10 cm (5 in × 4 in) or
 50 bags, 75 cm × 1.2 m (2.5 ft × 3.9 ft)

- (c) When the unit bag is gusseted, the dimensions will be expressed as width, depth, and length.

Examples:

25 bags, 43 cm × 10 cm × 50 cm (17 in × 4 in × 20 in) or
 100 bags, 50.8 cm × 30.4 cm × 76.2 cm (20 in × 12 in × 2½ ft)

- (d) For other square, oblong, rectangular, or similarly shaped containers, in terms of count followed by length, width, and depth, except depth need not be listed when less than 5 cm or 2 in. The linear dimensions shall be expressed as specified in Section 10.8.1.(a).

Example:

Bag-type commodities: 2 Pans, 20 cm × 20 cm (8 in × 8 in)

- (e) For circular or other generally round-shaped containers, except cups and the like, in terms of count followed by diameter and depth, except depth need not be listed when less than 5 cm or 2 in.

Example:

4 pans, 20 cm (8 in) diameter × 10 cm (4 in)

- (f) Cups – Notwithstanding the above requirements, the net quantity statement for containers such as cups will be listed in terms of count and liquid capacity per unit.

Example:

24 cups, 177 ml (6 fl oz) capacity

10.8.2. Capacity.

When the functional use of the container is related by label references in standard terms of measure to the capability of holding a specific quantity of substance or class of substances such references shall be a part of the net quantity statement and shall specify capacity as follows:

- (a) in SI units: in terms of volume for all containers and liners. The expressed capacity will be stated in terms of milliliters, except that a quantity of 1 liter or more shall be expressed in liters with the remainder in terms of decimal fractions of the liter; and
- (b) in U.S. customary units:
- (1) In terms of liquid measure for containers that are intended to be used for liquids, semisolids, viscous materials, or mixtures of solids and liquids. The expressed capacity will be stated in terms of the largest whole unit (gallon, quart, pint, fluid ounce) with any remainder in terms of common or decimal fractions of that unit.

Example:

Freezer Boxes –

4 Boxes, 946 ml capacity, 15 cm × 15 cm × 10 cm (1 qt capacity, 6 in × 6 in × 4 in)

- (2) In terms of dry measure for containers that are intended to be used for solids. The expressed capacity will be stated in terms of the largest whole unit (bushel, peck) with any remainder in terms of common or decimal fractions of that unit.

Example:

Leaf Bags –

8 bags, 211 L capacity, 1.21 m × 1.52 m (6 bu capacity, 4 ft × 5 ft)

- (3) Where containers are used as liners for other more permanent containers, in the same terms as are normally used to express the capacity of the more permanent containers.

Example:

Garbage Can Liners –

10 liners, 76.2 cm × 93.9 cm, fits up to 113 L cans (2 ft 6 in × 3 ft 1 in, fits up to 30 gal cans)

10.8.3. Terms.

For purposes of this section, the use of the terms “capacity,” “diameter,” and “fluid” is optional.

10.9. Textile Products, Threads, and Yarns.**10.9.1. Wearing Apparel.**

Wearing apparel (including non-textile apparel and accessories such as leather goods and footwear) sold as single unit items, or if normally sold in pairs (such as hosiery, gloves, and shoes) sold as single unit pairs, shall be exempt from the requirements for net quantity statement by count, as required by Section 6.4. Terms: Weight, Liquid Measure, Dry Measure, or Count of this regulation.

10.9.3. Textiles.

Bed sheets, blankets, pillowcases, comforters, quilts, bedspreads, mattress covers and pads, afghans, throws, dresser and other furniture scarves, tablecloths and napkins, flags, curtains, drapes, dishtowels, dishcloths, towels, facecloths, utility cloths, bathmats, carpets and rugs, potholders, fixture and appliance covers, nonrectangular diapers, slipcovers, etc., shall be exempt from the requirements of Section 6.9. Bi-dimensional Commodities of this regulation, provided:

- (a) The quantity statement for fitted sheets and mattress covers shall state, in centimeters and inches, the length and width of the mattress for which the item is designed and the size designation of the mattress if the item is intended to fit a mattress identified as “twin,” “double,” “queen,” “king,” “California king,” etc.

Example:

Double sheet for 137 cm × 190 cm (54 in × 75 in) mattress

(Amended 1987)

- (b) The quantity statement for flat sheets shall state, in centimeters and inches, the length and width of the mattress for which the sheet is designed, followed in parentheses by a statement, in centimeters and inches, of the length and width of the finished sheet. The quantity statement shall also state the size designation of the mattress for which the sheet is designed, such as “twin,” “double,” “queen,” “king,” “California king,” if the item is intended to fit such a mattress.

Example:

Twin flat sheet for 99 cm × 190 cm (39 in × 75 in) mattress 167 cm × 244 cm (66 in × 96 in) finished size

(Amended 1987)

- (c) The quantity statement for pillowcases shall state, in centimeters and inches, the length and width of the pillow for which the pillowcase is designed, followed in parentheses by a statement, in centimeters and inches of the length and width of the finished pillowcase. The quantity statement for pillowcases shall also state the size designation of the pillow for which the pillowcase is designed, for example, “youth,” “standard,” “queen,” etc., if the item is intended to fit such pillows.

Example:

Standard pillowcase for 51 cm × 66 cm (20 in × 26 in) pillow, 51 cm × 76 cm (20 in × 30 in) in finished size

(Amended 1977 and 1987)

- (d) The quantity statement for blankets, comforters, quilts, bedspreads, mattress pads, afghans, and throws shall state, in centimeters and inches, the length and width of the finished item. The quantity statement shall also state the length of any ornamentation and the size designation of the mattress for which the item is designed, if it is intended to fit, for example, a “twin,” “double,” “queen,” “king,” “California king,” etc., mattress.

(Amended 1988)

- (e) The quantity statement for tablecloths and napkins shall state, in centimeters and inches, the length and width of the finished item. The quantity statement also may state parenthetically, in centimeters and inches, the length and width of the item before hemming and be properly identified as such.
- (f) The quantity statement for curtains, drapes, flags, furniture scarves, etc., shall state, in centimeters and inches, the length and width of the finished item. The quantity statement also may state parenthetically, in centimeters and inches, the length of any ornamentation.
- (g) The quantity statement for carpets and rugs shall state, in meters and feet, with any remainder in decimal fractions of the meter for SI sizes or common or decimal fractions of the foot or in inches for U.S. customary sizes, the length and width of the item. The quantity statement also may state parenthetically, in centimeters and inches, the length of any ornamentation.
- (h) The quantity statement for woven dishtowels, dishcloths, towels, facecloths, utility cloths, bathmats, etc., shall state, in centimeters and inches, the length and width of the item. The quantity statement for such items, when knitted, need not state the dimensions.
- (i) The quantity statement for textile products such as potholders, fixture and appliance covers, slipcovers, non-rectangular diapers, etc., shall be stated in terms of count and may include size designations and dimensions.

- (j) The quantity statement for other than rectangular textile products identified in Sections (a) through (h) shall state the geometric shape of the product and the dimensions that are customarily used in describing such geometric shape.

Examples:

Round scarf , 190 cm (74 in) in diameter;

Oval tablecloth, 177 cm × 254 cm (70 in × 100 in) representing the maximum length and width in this case.

- (k) The quantity statement for packages of remnants of textile products of assorted sizes, when sold by count, shall be accompanied by the term “irregular dimensions” and the minimum size of such remnants.

(Added 1971)

10.9.3. Sewing Threads, Handicraft Threads, and Yarns.

Sewing and handicraft threads shall be labeled as follows:

- (a) The net quantity for sewing and handicraft threads shall be expressed in terms of meters and yards.
- (b) The net quantity statement for yarns shall be expressed in terms of mass or weight.
- (c) Thread products may, in lieu of name and address, bear a trademark, symbol, brand, or other mark that positively identifies the manufacturer, packer, or distributor provided such marks are filed with the Director.
- (d) Each unit of industrial thread shall be marked to show its net length in terms of meters and yards or its net weight in terms of kilograms or grams and avoirdupois pounds or ounces, except that ready-wound bobbins that are not sold separately shall not be required to be individually marked to show the number of bobbins contained therein and the net meters and yards of thread on each bobbin.

10.10. Packaged Seed.

Packages of seeds intended for planting with net contents of less than 225 g or 8 oz shall be labeled in full accord with this regulation except as follows:

- (a) The quantity statement shall appear in the upper 30 % of the principal display panel.
- (b) The quantity statement shall be in terms of:
- (1) the largest whole SI unit for all packages with weights up to 7 g; and
 - (2) in grams and ounces for all other packages with weights less than 225 g or 8 oz. (Amended 1995)
- (c) The quantity statement for coated seed, encapsulated seed, pelletized seed, pre-planters, seed tapes, etc., shall be in terms of count.

(Added 1972) (Amended 1975 and 1993)

Section 11. Exemptions

NOTE 8: Section 11. Exemptions include several requirements that refer only to the historic use of U.S. customary units or are direct restatements of exemptions contained in federal laws or regulations which do not include SI units. SI equivalents are omitted in most of these requirements because the SI units would not be meaningful or useful.

(Added 1993) (Amended 1995)

11.1. Random Packages.

A random package bearing a label conspicuously declaring:

- (a) the net weight;
- (b) unit price; and
- (c) the total price

Shall be exempt from the SI units, type size, location, and free area requirements of this regulation. In the case of a random package packed at one place for subsequent sale at another, neither the price per unit of weight nor the total selling price need appear on the package, provided the package label includes both such prices at the time it is offered or exposed for sale at retail.

This section shall also apply to uniform weight packages of fresh fruit or vegetables labeled by count, in the same manner and by the same type of equipment as random packages exempted by this section, and cheese and cheese products labeled in the same manner and by the same type of equipment as random packages exempted by this section.

(Amended 1989)

11.1.1. Indirect Sale of Random Packages.

A random package manufactured or produced and offered for indirect sale (e.g., e-commerce, online, phone, fax, catalog, and similar methods) shall be exempt from the labeling requirements of:

- (a) unit price
- (b) total price

When the following requirements are met:

At the time of the delivery, each package need only bear a statement of net weight, provided that:

- (a) the unit price is set forth and established in the initial product offering;
- (b) the maximum possible net weight, unit price, and maximum possible price are provided to the customer by order confirmation when the product is ordered; and
- (c) when the product is delivered, the customer receives a receipt bearing the following information: identity, declared net weight, unit price, and the total price.

Indirect Sales: For the purpose of Section 11.1.1. Indirect Sale of Random Packages, indirect sales are sales where the customer makes a selection and places an order, but cannot be present when the determination of the net quantity is made. Examples of such indirect methods include, without limitation, Internet or online sales, sales conducted by telephone or facsimile, and catalog sales.

(Added 2001) (Amended 2002)

11.2. Small Confections.

Individually wrapped pieces of “penny candy” and other confectionery of less than 15 g or ½ oz net weight per individual piece shall be exempt from the labeling requirements of this regulation when the container in which such confectionery is shipped is in conformance with the labeling requirements of this regulation. Similarly, when such confectionery items are sold in bags or boxes, such items shall be exempt from the labeling requirements of this regulation, including the required declaration of net quantity of contents, when the declaration of the bag or box meets the requirements of this regulation.

11.3. Small Packages of Meat or Meat Products.

Individually wrapped and labeled packages of meat or meat products of less than 15 g or ½ oz net weight, which are in a shipping container, need not bear a statement of the net quantity of contents when the statement of the net quantity of contents on the shipping container is in conformance with the labeling requirements of this regulation.

(Added 1987)

11.4. Individual Servings.

Individual serving size packages of foods containing less than 15 g or ½ oz or less than 15 ml or ½ fl oz for use in restaurants, institutions, and passenger carriers, and not intended for sale at retail, shall be exempt from the required declaration of net quantity of contents specified in this regulation.

11.5. Cuts, Plugs, and Twists of Tobacco and Cigars.

When individual cuts, plugs, and twists of tobacco and individual cigars are shipped or delivered in containers that conform to the labeling requirements of this regulation, such individual cuts, plugs, and twists of tobacco and cigars shall be exempt from such labeling requirements.

11.6. Reusable (Returnable) Glass Containers.

Nothing in this Regulation shall be deemed to preclude the continued use of reusable (returnable) glass containers, provided such glass containers ordered after the effective date of this regulation shall conform to all requirements of this regulation.

11.7. Cigarettes and Small Cigars.

Cartons of cigarettes and small cigars, containing ten individual packages of twenty, labeled in accordance with the requirements of this regulation shall be exempt from the requirements set forth in Section 8.1.1. Location, Section 8.2.1. Minimum Height of Numbers and Letters, and Section 10.4. Multi-unit Packages, provided such cartons bear a declaration of the net quantity of commodity in the package.

11.8. Packaged Commodities with Labeling Requirements Specified in Federal Law.

Packages of meat and meat products, poultry products, tobacco and tobacco products, pesticides, and alcoholic beverages shall be exempt from those portions of these regulations specifying location and minimum type size of the net quantity declaration, provided quantity labeling requirements for such products are specified in federal law so as to follow reasonably sound principles of providing consumer information. (See also Section 11.32. SI Units, Exemptions - Consumer Commodities.)

11.9. Fluid Dairy Products, Ice Cream, and Similar Frozen Desserts.

- (a) When packaged in ½ liq pt and ½ gal containers, are exempt from the requirements for stating net contents of 8 fl oz and 64 fl oz, which may be expressed as ½ pt and ½ gal, respectively.
- (b) When measured by and packaged in measure containers as defined in “Measure Container Code” of the NIST Handbook 44, “Specifications, Tolerances, and Other Technical Requirements for Weighing Measuring Devices” are exempt from the requirements of Section 8.1.1. Location that the declaration of net contents be located within the bottom 30 % of the principal display panel.
- (c) Milk and milk products when measured by and packaged in glass or plastic containers of ½ pt, 1 pt, 1 qt, ½ gal, and 1 gal capacities are exempt from the placement requirement of Section 8.1.1. Location that the declaration of net contents be located within the bottom 30 % of the principal display panel, provided other required label information is conspicuously displayed on the cap or outside closure and the required net quantity of contents declaration is conspicuously blown, formed, or molded on, or permanently applied to that part of the glass or plastic container that is at or above the shoulder of the container.

(Amended 1993)

11.10. Single Strength and Less than Single-Strength Fruit Juice Beverages, Imitations thereof, and Drinking Water.

- (a) When packaged in glass, plastic, or fluid milk type paper containers of 8 fl oz and 64 fl oz capacity, are exempt from the requirements of Section 6.2. Largest Whole Unit to the extent that net contents of 8 fl oz and 64 fl oz (or 2 qt) may be expressed as ½ pt (or half pint) and ½ gal (or half gallon), respectively.
- (b) When packaged in glass or plastic containers of ½ pt, 1 pt, 1 qt, ½ gal, and 1 gal capacities, are exempt from the placement requirements of Section 8.1.1. Location that the declaration of net contents be located within the bottom 30 % of the principal display panel, provided other label information is conspicuously displayed on the cap or outside closure and the required net quantity of contents declaration is conspicuously blown, formed, or molded into or permanently applied to that part of the glass or plastic container that is at or above the shoulder of the container.

(Amended 1993)

11.11. Soft Drink Bottles.

Bottles of soft drinks shall be exempt from the placement requirements for the declaration of:

- (a) identity when such declaration appears on the bottle closure; and
- (b) quantity when such declaration is blown, formed, or molded on or above the shoulder of the container and when all other information required by this regulation appears only on the bottle closure.

11.12. Multi-unit Soft Drink Packages.

Multi-unit packages of soft drinks are exempt from the requirement for a declaration of:

- (a) responsibility when such declaration appears on the individual units and is not obscured by the multi-unit packaging or when the outside container bears a statement to the effect that such declaration will be found on the individual units inside; and
- (b) identity when such declaration appears on the individual units and is not obscured by the multi-unit packaging.

11.13. Butter.

When packaged in 4 oz, 8 oz, and 1 lb packages with continuous label copy wrapping, butter is exempt from the requirements that the statement of identity (Section 3.1.1. Parallel Identity Declaration: Consumer Package) and the net quantity declaration (Section 8.1.5. Parallel Quantity Declaration) be generally parallel to the base of the package. When packaged in 8 oz and 1 lb units, butter is exempt from the requirement for location (Section 8.1.1. Location) of net quantity declaration.

(Amended 1980 and 1993)

11.14. Eggs.

Cartons containing 12 eggs shall be exempt from the requirement for location (Section 8.1.1. Location) of net quantity declaration. When such cartons are designed to permit division in half, each half shall be exempt from the labeling requirements of this regulation if the undivided carton conforms to all such requirements.

11.15. Flour.

Packages of wheat flour in conventional 2, 5, 10, 25, 50, and 100 lb packages shall be exempt from the requirement in this regulation for location (Section 8.1.1. Location) of the net quantity declaration.

(Amended 1980 and 1993)

11.16. Small Packages.

On a principal display panel of 32 cm² (5 in²) or less, the declaration of quantity need not appear in the bottom 30 % of the principal display panel if that declaration satisfies the other requirements of this regulation.

(Amended 1980)

11.17. Decorative Containers.

The principal display panel of a cosmetic marketed in a "boudoir-type" container, including decorative cosmetic containers of the "cartridge," "pill box," "compact," or "pencil" variety, and those with a capacity of 7.4 ml (¼ oz) or less, may be a tear-away tag or tape affixed to the decorative container and bearing the mandatory label information as required by this regulation.

(Amended 1980)

11.18. Combination and Variety Packages.

Combination and variety packages are exempt from the requirements in this regulation for:

- (a) location (see Section 8.1.1. Location);
- (b) free area (see Section 8.1.4. Free Area); and
- (c) minimum height of numbers and letters (see Section 8.2.1. Minimum Height of Numbers and Letters).

(Amended 1989)

11.19. Margarine.

Margarine in 1 lb rectangular packages, except for packages containing whipped or soft margarine or packages containing more than four sticks, shall be exempt from the requirement in this regulation for location (see Section 8.1.1. Location) of the net quantity declaration.

(Amended 1980 and 1993)

11.20. Corn Flour and Corn Meal.

Corn flour and corn meal packaged in conventional 5, 10, 25, 50, and 100 lb bags shall be exempt from the requirement in this regulation for location (see Section 8.1.1. Location) of the net quantity declaration.

(Amended 1978 and 1980)

11.21. Prescription and Insulin Containing Drugs.

Prescription and insulin containing drugs subject to the provisions of Section 503(b) (1) or 506 of the Federal Food, Drug, and Cosmetic Act shall be exempt from the provisions of this regulation.

11.22. Camera Film, Video Recording Tape, Audio Recording Tape, and Other Image and Audio Recording Media Intended for Retail Sale and Consumer Use.

Image and audio media packaged and labeled for retail sale are exempt from the net quantity statement requirements of this regulation that specify how measurement of commodities should be expressed, provided:

- (a) Unexposed or Unrecorded Media. – The net quantity of contents of unexposed or unrecorded image and audio media is expressed:
 - (1) For still film, tape, or other still image media, in terms of the usable or guaranteed number of available still image exposures. The length and width measurements of the individual exposures, expressed in millimeters or inches, are authorized as an optional statement.

Examples:

36 exposures, 36 mm × 24 mm, or
12 exposures, 2¼ in × 2¼ in

- (2) For bulk or movie film, in terms of length (in meters or feet) of film available for exposure.
- (3) For all other image and/or audio media, in terms of length of time of electronic media available for recording, together with recording and/or playing speed or other machine settings as necessary. Supplemental information concerning the length of the media [NOTE 9] may be provided.

Supplemental information may be provided on other than the principal display panel.

NOTE 9: *Size, length of media, and format details to ensure interchangeability and other characteristics of audio and imaging media are available in the applicable American National Standards.*

- (b) Exposed, Recorded, or Processed Media. – The net quantity of contents of exposed or processed film or prerecorded electronic media shall be expressed in terms of the length of time that is of entertainment value.

“Entertainment value” is defined as that portion of a film, tape, or other media that commences with the first frame of sound or picture, whichever comes first after the countdown sequence (if any), and ends with either: (a) the last frame of credits; (b) the last frame of the phrase “The End”; or (c) the end of sound, whichever is last.

(Amended 1990)

11.23. Tint Base Paint.

Tint base paint may be labeled on the principal display panel in terms of a liter, quart, or a gallon, including the addition of colorant selected by the purchaser, provided the system employed ensures that the purchaser always obtains a liter, quart, or a gallon; and further provided, in conjunction with the required quantity statement on the principal display panel, a statement indicating that the tint base paint is not to be sold without the addition of colorant is presented; and further provided the contents of the container, before the addition of colorant, is stated in fluid ounces elsewhere on the label.

Wherever the above conditions cannot be met, containers of tint base paint must be labeled with a statement of the actual net contents prior to the addition of colorant in full accord with all the requirements of this regulation.

(Added 1972) (Amended 1980 and 1993)

11.24. Motor Oil in Cans.

Motor oils when packed in cans bearing the principal display panel on the body of the container are exempt from the requirements of Section 3. Declaration of Identity: Consumer Package to the extent that the Society of Automotive Engineers

(SAE) viscosity number is required to appear on the principal display panel, provided the SAE viscosity number appears on the can lid and is expressed in letters and numerals in type size of at least 6 mm or ¼ in.

(Amended 1974, 1980, and 1993)

11.25. Pillows, Cushions, Comforters, Mattress Pads, Sleeping Bags, and Similar Products.

Those products including pillows, cushions, comforters, mattress pads, and sleeping bags that bear a permanent label as designated by the International Association of Bedding and Furniture Law Officials (iabflo.org) or the Department of Consumer Affairs, Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation (BEARHFTI) (www.bearhfti.ca.gov) shall be exempt from the requirements for location (Section 8.1.1. Location), size of letters or numbers (Sections 8.2.1. Minimum Height of Numbers and Letters and 8.2.2. Numbers and Letters: Proportion), free area (Section 8.1.4. Free Area), and the declarations of identity and responsibility (Sections 3.1. Declaration of Identity and 5. Declaration of Responsibility: Consumer and Nonconsumer Packages), provided declarations of identity, quantity, and responsibility are presented on a permanently attached label and satisfy the other requirements of this Regulation, and further provided the information on such permanently attached label be fully observable to the purchaser.

(Added 1973)

11.26. Commodities' Variable Weights and Sizes.

Individual packaged commodities put up in variable weights and sizes for sale intact and intended to be weighed and marked with the correct quantity statement prior to or at the point of retail sale are exempt from the requirements of Section 6. Declaration of Quantity: Consumer Packages while moving in commerce and while held for sale prior to weighing and marking, provided the outside container bears a label declaration of the total net weight.

(Added 1973)

11.27. Packaged Commodities Sold by Count.

[NOTE 10] – When a packaged consumer commodity is properly measured in terms of count only, or in terms of count and some other appropriate unit, and the individual units are fully visible to the purchaser, such packages shall be labeled in full accord with this Regulation, except that those containing six or less items need not include a statement of count.

(Added 1973)

NOTE 10: When the net contents declaration of a package that may enter interstate commerce includes count, federal regulations under the Federal Fair Packaging and Labeling Act provide no exemption from declaring the count unless the count is one (1).

(Added 1990)

11.28. Textile Packages.

Packages of textiles that are required by Section 6.4.1. Combination Declaration to provide a combination declaration stating the quantity of each individual unit and the count shall be exempt from the requirements in this regulation for:

- (a) Location (see Section 8.1.1. Location);
- (b) Free area (see Section 8.1.4. Free Area); and
- (c) Minimum height of numbers and letters (see Section 8.2.1. Minimum Height of Numbers and Letters).

(Added 1971) (Amended 1989)

11.29. Spot Label.

The declaration of quantity of the contents of a package is exempt from Section 8.1.1. Location requiring the quantity declaration to appear in the bottom 30 % of the principal display panel, as long as the declaration of quantity appears in the lower 30 % of the spot label. In no case may the size of the spot label be used to determine the minimum type size; see Section 8.2. Calculation of Area of Principal Display Panel for Purposes of Type Size for this determination.

(Added 1990)

11.30. Header Strip.

The declaration of quantity of the contents of a package is exempt from Section 8.1.1. Location requiring the quantity declaration to appear in the bottom 30 % of the principal display panel, as long as the declaration of quantity appears in the lower 30 % of the header strip or header label. In no case may the size of the header strip be used to determine the minimum type size; see Section 8.2. Calculation of Area of Principal Display Panel for Purposes of Type Size for this determination.

(Added 1990)

11.31. Decorative Wallcovering Borders.

Decorative wallcovering borders when packaged and labeled for retail sale shall be exempt from the requirements of Sections 6.6.2. One Meter, 1 Square Meter, 1 Kilogram, 1 Liter, 1 Cubic Meter, or More; 6.8.2. One Foot, 1 Square Foot, 1 Pound, 1 Pint, 1 Gallon or More; and 6.9. Bi-dimensional Commodities provided the length and width of the border are presented in terms of the largest whole unit in full accord with the other requirements of the regulation.

(Added 1992) (Amended 1993)

11.32. SI Units, Exemptions - Consumer Commodities.

The requirements for statements of quantity in SI units (except for those in Section 10.10. Packaged Seed and Section 11.22. Camera Film, Video Recording Tape, Audio Recording Tape and Other Image and Audio Recording Media Intended for Retail Sale and Consumer Use) in Section 6. Declaration of Quantity: Consumer Packages shall not apply to:

- (a) foods packaged at the retail store level;
- (b) random weight packages (see Sections 2.4. Random Package and 11.1. Random Packages);
- (c) package labels printed before February 14, 1994;
- (d) meat and poultry products subject to the Federal Meat or Poultry Products Inspection Acts;
- (e) tobacco or tobacco products;
- (f) any beverage subject to the Federal Alcohol Administration Act;
- (g) any product subject to the Federal Insecticide, Fungicide, and Rodenticide Act;
- (h) drugs and cosmetics subject to the Federal Food, Drug and Cosmetic Act;
- (i) nutrition labeling information.

11.33. U.S. Customary Units, Exemptions - Consumer Commodities.

The requirements for statements of quantity in U.S. customary units shall not apply to packages that bear appropriate SI units. This exemption does not apply to foods, drugs, or cosmetics or to packages subject to regulation by the FTC, meat and poultry products subject to the Federal Meat or Poultry Products Inspection Acts, and tobacco or tobacco products.

(Added 1999)

Section 12. Variations to be Allowed [NOT ADOPTED - § 4511. Exceptions]**Section 13. Retail Sale Price Representations [NOT ADOPTED - § 4511. Exceptions]****Section 14. Revocation of Conflicting Regulations [NOT ADOPTED - § 4511. Exceptions]****Section 15. Effective Date [NOT ADOPTED - § 4511. Exceptions]****§ 4512. Additional Requirements.**

The following requirements apply in addition to those contained within the Uniform Packaging and Labeling Regulation in the National Institute of Standards and Technology Handbook 130.

Note: Authority cited: Sections 12027, 12603, 12609 and 12610, Business and Professions Code. Reference: Sections 12601, 12602, 12603 and 12610, Business and Professions Code.

§ 4512.1. Polyethylene Products.

The declaration of quantity of contents for polyethylene products shall be as follows:

(a) Consumer and nonconsumer packages of sheeting and film.

- Length and width.
- Area in square meters or square feet.
- Thickness in micrometers and mils. (1 mil = 0.001 in = 25.4 micrometers)
- Weight.

(b) The following consumer products sold at retail shall be labeled in the following terms:

(1) Food wrap.

- Length and width.
- Area in square meters or square feet.

(2) Lawn and trash bags.

- Count.
- Dimensions.
- Thickness in micrometers and mils.
- Capacity.

(3) Food and sandwich bags.

- Count.
- Dimensions.
- Capacity (except for fold-over sandwich bags).

(c) Bags not intended for the retail consumer shall be labeled in terms of:

- Count.
- Dimensions.
- Thickness in micrometers or mils.
- Weight.
- Capacity.

Note: Authority cited: Sections 12027, 12603, 12609 and 12610, Business and Professions Code. Reference: Sections 12601, 12602, 12603 and 12610, Business and Professions Code.

§ 4512.2. Animal Bedding.

Packaged animal bedding of all kinds, except for baled straw, shall be labeled by volume, that is by cubic meter, liter, or milliliter, and by the cubic yard, cubic foot, or cubic inch. If the commodity is packaged in a compressed state, the quantity declaration shall include both the quantity in the compressed state and the usable quantity that can be recovered. Example: "250 ml - expands to 500 ml (500 cu in expands to 1000 cu in)."

Note: Authority cited: Sections 12027, 12603, 12609 and 12610, Business and Professions Code. Reference: Sections 12601, 12602, 12603 and 12610, Business and Professions Code.

§ 4512.3. Enforcement.

A sealer may by written order forbid the display for sale, sale, or transport of any package which does not bear the labeling required by Chapter 6, of Division 5 of the Business and Professions Code.

Note: Authority cited: Sections 12027 and 12609, Business and Professions Code. Reference: Sections 12601, 12607, 12609 and 12611, Business and Professions Code.

UPLR Appendix A: SI/U.S. Customary Conversion Factors **

LENGTH					
1 mil (0.001 in)	=	25.4	μm^*	1 micrometer	= 0.039 370 mil
1 inch	=	2.54	cm^*	1 millimeter	= 0.039 370 1 in
1 foot	=	30.48	cm^*	1 centimeter	= 0.393 701 in
1 yard	=	0.914 4	m^*	1 meter	= 3.280 84 ft
1 rod	=	5.029 2	m^*		
AREA					
1 square inch	=	6.451 6	cm^{2*}	1 square centimeter	= 0.155 000 in^2
1 square foot	=	929.030	cm^2	1 square decimeter	= 0.107 639 ft^2
1 square yard	=	0.836 127	m^2	1 square meter	= 10.763 9 ft^2
VOLUME or CAPACITY					
1 cubic inch	=	16.387 1	cm^3	1 cubic centimeter	= 0.061 023 74 in^3
1 cubic foot	=	0.028 316 8	m^3	1 cubic decimeter	= 0.035 314 7 ft^3
	=	28.316 8	L	1 cubic meter	= 35.314 7 ft^3
1 cubic yard	=	0.764 555	m^3		= 1.307 95 yd^3
1 fluid ounce	=	29.573 5	ml	1 milliliter (cm^3)	= 0.033 814 fl oz
1 liquid pint	=	473.177	ml	1 liter	= 1.056 69 liq qt
	=	0.473 177	L		= 0.264 172 gal
1 liquid quart	=	946.353	ml	1 dry pint	= 550.610 5 ml
	=	0.946 353	L	1 dry quart	= 1.101 221 L
1 gallon	=	3.785 41	L	1 peck	= 8.809 768 L
1 bushel	=	35.239 1	L	1 gill	= 118.294 1 ml
MASS (weight)					
1 ounce	=	28.349 5	g	1 milligram	= 0.000 035 274 oz
1 pound	=	453.592 37	g^*		= 0.015 432 4 grain
		=	0.453 592	kg	1 gram
1 grain	=	64.798 91	mg	1 kilogram	= 2.204 62 lb
TEMPERATURE					
$t_{\circ F} = 1.8 t_{\circ C} + 32^*$			$t_{\circ C} = \frac{5}{9}(t_{\circ F} - 32)^*$		
<p>* Exactly ** These conversion factors are given to six or more significant digits in the event such accuracy is necessary. To convert to U.S. customary units divide the factor rather than multiplying. (Amended 1998)</p>					

UPLR Appendix B: Converting U.S. Customary Units to SI Units for Quantity Declarations on Packages

1. Conversion.

To convert an U.S. customary quantity to an SI quantity, multiply the appropriate conversion factor in Table 1 in Appendix A by the U.S. customary unit and round according to the following rules.

2. Rounding and Significant Digits.

It is the packager's responsibility to round converted values appropriately and select the appropriate number of significant digits to use in quantity declaration. [These rounding rules are for converting quantity determinations on packages and do not apply to digital scales that automatically round indications to the nearest indicated value.] 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. For example, if a package is labeled 453.59 g (1 lb), the packer is implying that the package declaration is accurate within ± 0.005 g (or ± 5 mg). For liquid volume measure, a label declaration of 473 ml (16 fl oz) implies that the package declaration is accurate to within ± 0.5 ml (0.01 fl oz). The requirements of 6.13. Rounding apply to all quantity declarations that are derived from converted values:

6.13. Rounding. – In all conversions for the purpose of showing an equivalent SI or U.S. customary quantity to a rounded U.S. customary or SI quantity, or in calculated values to be declared in the net quantity statement, the number of significant digits retained must be such that accuracy is neither sacrificed nor exaggerated. 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. In no case shall rounded net contents declarations overstate a quantity; the packer may round converted values down to avoid overstating the net contents.

NOTE: When as a result of rounding SI or U.S. customary declarations calculated based on the conversion factors in Appendix A, the resulting declarations are not exact, the largest declaration, whether metric or U.S. customary, will be used for enforcement purposes to determine whether a package contains at least the declared amount of the product.

Do not round conversion factors or any other quantity used or determined in the calculation; only round the final quantity to the number of significant digits needed to maintain the accuracy of the original quantity. Use the rounding rules presented below in Table 1 as guidance to round the final result. In general, quantity declarations on consumer commodities should only be shown to two or three significant digits (for example, 453 g or 85 g). Any final zeros to the right of the decimal point need not be expressed. The U.S. customary and SI declarations of quantity must be accurate and equivalent to each other. For example, a package bearing a net weight declaration of 2 lb (32 oz) must also include an SI declaration of 907 g.

Table 1. Rounding Rules		
When The First Digit Dropped is:	The Last Digit Retained is:	Examples
less than 5	Unchanged	2.44 to 2.4 2.429 to 2.4
more than 5, or 5 followed by at least 1 digit other than 0	Increased by 1	2.46 to 2.5 2.451 to 2.5
5 followed by zeros	Unchanged if Even, or Increased by 1 if Odd	2.450 to 2.4 2.550 to 2.6

- (a) When the first digit discarded is less than 5, the last digit retained should not be changed. For example, if the quantity 984.3 is to be declared to 3 significant digits, the number 3 to the right of the decimal point must be discarded since it is less than 5 and the last digit to be retained (the number 4) will remain unchanged. The rounded number will read 984. The same rationale applies to numbers declared to two significant digits (for example 68.4 and 7.34); again, the final digit is dropped and the last digit retained remains unchanged so that the "rounded-off" numbers become 68 and 7.3 respectively.

- (b) When the first digit to be discarded is greater than 5, or it is a 5 followed by at least one digit other than zero, the last digit to be retained should be increased by one unit.

Examples:

984.7	becomes	985
984.51	becomes	985
6.86	becomes	6.9
6.88	becomes	6.9

- (c) When the first digit to be discarded is exactly 5, followed only by zeros, the final digit to be retained should be rounded up if it is an odd number (1, 3, 5, 7, or 9), but no adjustment should be made if it is an even number (2, 4, 6, or 8).

Examples:

984.50	becomes	984
985.50	becomes	986
68.50	becomes	68
7.450	becomes	7.4
7.550	becomes	7.6

**NOTE: See additional examples in Table 2.*

3. Additional Advice on Rounding and Significant Digits

- (a) These rules require the packer to use good judgment in making decisions on how to round and the number of significant digits to use in quantity declarations. Rounding should always be done in one step; for example, if 16.946 47 g has to be rounded to three significant digits, it should be rounded to 16.9 g, not 16.946 5, then to 16.946, then to 16.95 which would then round to 17.0 g (see rounding rules above).
- (b) Do not use rounded SI values to calculate quantities. For example, using 1 in = 25.4 mm, rounded to 25 mm, should not be multiplied by 2 to determine the SI equivalent for 2 in. The SI equivalent for 2 in is determined by multiplying 2 in \times 25.4 mm = 50.8 mm, then rounding to 51 mm.
- (c) If a dimension given as 8 ft is valid to the nearest 1/10 in, consider it to mean 96.0 in and treat it as having 3 significant digits. The rounded dimension would then be 2.44 m instead of 2.4 m.
- (d) Conversions using a multiple digit conversion factor usually give a product with more digits than the original quantity. The final product should contain no more significant digits than are contained in the number with the fewest significant digits used in the conversion. For example, the area of a sheet of paper is determined on a calculator by multiplying 1.25 cm (length) \times 1.5 cm (width) = 1.875 cm². The product given to 4 significant digits on the calculator cannot be any more accurate than two significant digits (the number of significant digits in 1.5 cm), so the area should be declared as 1.9 cm².
- (e) Packagers of consumer commodities should be aware that when a converted value is rounded up, there may be a need to (1) increase the package contents and/or, (2) select a converted value that does not exaggerate the precision of the quantity or overstate the net contents. For example, under the rules above, a net weight declaration of 16 oz (453.592 37 g) may be rounded up to 454 g for three significant digits. Inspections by weights and measures officials are typically conducted using devices with a resolution of 0.5 g or less. If the packer does not address this possibility, some lots of commodities may pass when the U.S. customary declaration is tested, but fail when the SI declaration is verified.

Table 2. Examples		
Weight: To convert ounces to grams, multiply ounces by 28.349 5 grams		
U.S. Customary	Calculated SI	Rounded SI
1.0 oz	28.349 5 g	28 g
5.0 oz	141.747 6 g	142 g
10¼ oz	290.582 38 g	291 g*
16.0 oz	453.592 4 g	454 g*
32.0 oz	907.184 g	907 g
48.0 oz	1360.776 g	1.36 kg
5 lb	2.267 962 kg	2.27 kg*
10 lb	4.535 924 kg	4.54 kg*
25 lb	11.339 81 kg	11.3 kg
Liquid Volume: To convert fluid ounces to milliliters, multiply fluid ounces by 29.573 5 milliliters		
U.S. Customary	Calculated SI	Rounded SI
1.0 fl oz	29.573 5 ml	30 ml*
8.0 fl oz	236.588 ml	237 ml*
16.0 fl oz	473.176 ml	473 ml
32.0 fl oz	946.353 ml	946 ml
1 gal	3.785 41 L	3.79 L*
2½ gal	9.463 525 L	9.46 L
5 gal	18.927 05 L	18.9 L
Dry Measure: To convert dry pints to milliliters, multiply dry pints by 550.610 5 milliliters		
U.S. Customary	Calculated SI	Rounded SI
1 dry pt	550.610 5 ml	551 ml*
1 dry qt	1.101 221 L	1.1 L
Length: To convert inches to millimeters, multiply inches by 25.4 millimeters		
U.S. Customary	Calculated SI	Rounded SI
10.5 in	266.7 mm	267 mm* or 26.7 cm*
1 ft	30.48 cm	305 mm* or 30.5 cm*
5 ft	152.4 cm	152 cm or 1.5 m
50 ft	15.240 03 m	15.2 m
100 ft	30.480 06 m	30.5 m*
* See 6.13. Rounding located under UPLR Appendix B		

Article 3. Wood for Fuel Purposes

§ 4530. Definitions.

The following definitions apply to this article only and do not affect the provisions of any other section, article, or chapter. Nothing in this article shall be deemed to apply to charcoal sold for fuel purposes.

- (a) **Bulk Firewood.** All firewood which is not packaged and all packaged firewood of quantities greater than four cubic feet.
- (b) **Cord.** The cord is the standard measure for bulk firewood, and shall contain 128 cubic feet of wood, ranked and well-stowed.
- (c) **Firewood.** “Firewood” has the same meaning as “wood for fuel purposes”.
- (d) **Kindling.** Small pieces of wood that are readily ignited and primarily used in starting a fire.
- (e) **Manufactured Products.** Compressed or non-compressed products for fuel purposes made from, but not limited to, sawdust, treated or untreated chips or chunks, cut or split wood.
- (f) **Other Terms.** The use of the terms “face cord”, “rack”, “rick”, “tier”, “pile” or “truck-load”, or any other term describing a unit of measure different than those specified in this article shall be prohibited.
- (g) **Ranked and Well-Stowed.** Wood placed in a row or rows, with individual pieces touching and parallel to each other and stacked in a compact manner minimizing spaces between pieces.
- (h) **Sell.** “Sell” has the same meaning as defined in Business and Professions Code Section 12009.
- (i) **Wood for Fuel Purposes.** Any kindling, logs, boards, timbers, slab wood, mill wood, manufactured products, cut timber, or other wood, split or not split, used for or intended to be used for campfires, or for heating in fireplaces or stoves, or for cooking.

NOTE: Authority cited: Sections 12024.11, 12027 and 12107.1, Business and Professions Code. Reference: Sections 12024.11 and 12107.1, Business and Professions Code.

§ 4531. Method of Sale.

Wood, for fuel purposes, shall be sold or offered for sale by cord measure, fraction of the cord, or percentage of the cord, excepting as hereinafter provided.

- (a) Wood for fuel purposes, other than manufactured products, when sold in quantities less than one-eighth cord, shall be sold by the cubic foot or fraction of the cubic foot.
- (b) Manufactured products for fuel purposes shall be sold as follows:
 - (1) Compressed products having any dimension greater than six inches shall be sold by weight and count.
 - (2) Compressed products not greater than six inches in any dimension shall be sold by weight.
 - (3) Non-compressed products not greater than six inches in any dimension shall be sold by the cubic foot or fraction of the cubic foot.

NOTE: Authority cited: Sections 12024.11, 12027 and 12107.1, Business and Professions Code. Reference: Sections 12024.11 and 12107.1, Business and Professions Code.

§ 4532. Invoice.

A sales invoice or delivery ticket shall be presented by the seller to the purchaser whenever any non-packaged wood for fuel purposes is sold. The sales invoice or delivery ticket shall contain at least the name and address of the seller, the date purchased or delivered, the quantity purchased, and the price of the quantity purchased.

NOTE: Authority cited: Sections 12024.11, 12027 and 12107.1, Business and Professions Code. Reference: Sections 12024.11 and 12107.1, Business and Professions Code.

§ 4533. Kindling.

Whenever kindling is included as part of the represented quantity and is ten percent or more by volume of the represented

quantity, the percentage of kindling, within five percent by volume, shall be stated on the label or sales invoice or delivery ticket.

NOTE: Authority cited: Sections 12024.11, 12027 and 12107.1, Business and Professions Code. Reference: Sections 12024.11 and 12107.1, Business and Professions Code.

§ 4534. Identity.

Whenever there is a representation as to the species, species group of origin or the type of wood, the representation or statement of identity shall be consistent with one of the following:

- (a) If a common name is stated, all wood shall be of that species (e.g., White Oak, Jeffery Pine, Grand Fir, etc.).
- (b) If a group is stated, all wood shall be of that same group of origin (e.g., oak, pine, fir, etc.).

If either hardwood or softwood is stated, all wood must be of that type and the common name or group of origin for any wood present must be stated. If there is a mixture of types (hardwood and softwood), the percentage of each, within 10% of volume of each, shall be stated. The volume of each shall be determined as per the volumetric test procedures set forth below.

NOTE: Authority cited: Sections 12024.11, 12027 and 12107.1, Business and Professions Code. Reference: Sections 12024.11 and 12107.1, Business and Professions Code.

§ 4535. Volumetric Test Procedure for Bulk Firewood.

Editor's Note: Effective July 1, 2017, CCR §§ 4535 through 4536.1. will be replaced with procedures in NIST Handbook 133 Paragraph 3.14. Firewood – Volumetric Test Procedure for Packaged Firewood with a Labeled Volume of 113 L [4 ft³] or Less and Stacked Firewood Sold by the Cord or Fractions of a Cord Pursuant to BPC § 12211.

Section 4600. National Uniformity, NIST Handbook 133 Chapter 3. Test procedures – For Packages Labeled by Volume, Paragraph 3.14. Firewood have been extracted from CCR Chapter 11 and appear in this document following § 4536.1.

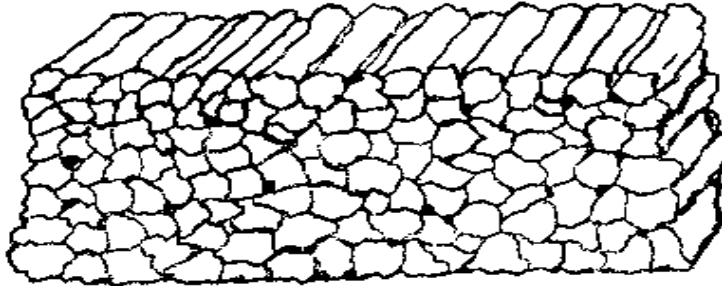
§ 4535.1. Stacking:

- (a) Firewood shall be measured when ranked and well-stowed, and stacked in a geometrical shape that will facilitate volume calculations (i.e., rectangular, triangular or combination of the two). The stack may need some adjustment to meet these requirements. (See Figure 1.)

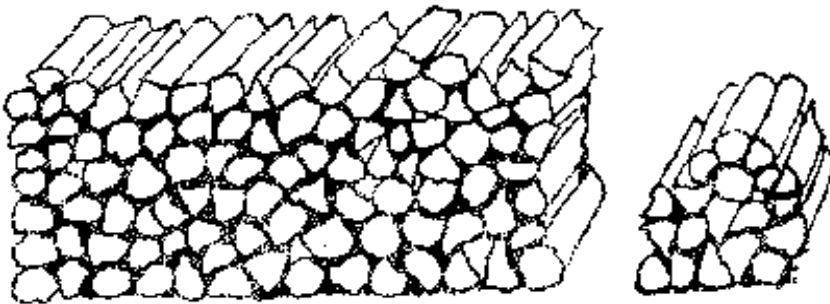
NOTE: If the wood is stacked in multiple rows, the measurements of the individual rows are used to determine the volume of the total stack.

NOTE: Authority cited: Sections 12024.11, 12027 and 12107.1, Business and Professions Code. Reference: Sections 12024.11 and 12107.1, Business and Professions Code.

Figure 1.



Cord of 128 cubic feet ranked and well-stowed.



Same cord of 128 cubic feet that is not ranked and well-stowed. Shows overage!

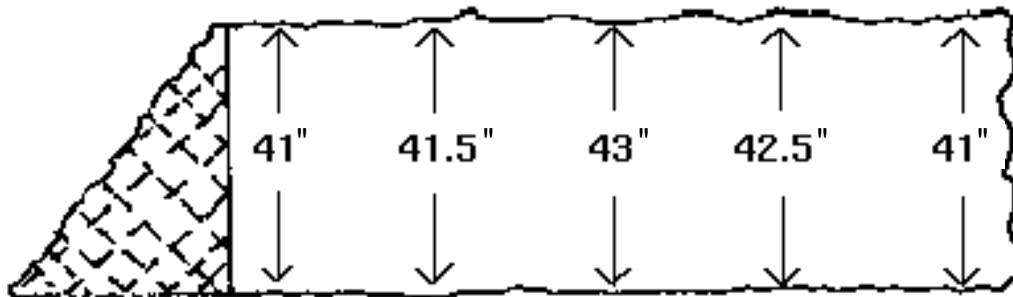
§ 4535.2. Measuring:

NOTE: A calibrated linear measure shall be used. All measurements shall be taken in increments no greater than 1/8 inch and rounded up. More measurements than specified may be taken.

(a) Measurement of the rectangular portion of a stack.

- (1) Average height determination of a rectangular stack: Starting at one end of the stack, measure the height of the stack, on both sides, at approximately 2 foot intervals, along the length of the stack, or at four proportionately equal intervals if the stack is less than 6 feet long. (Minimum of 4 measurements on each side shall be taken.) Calculate the average height. (See Figure 2.)

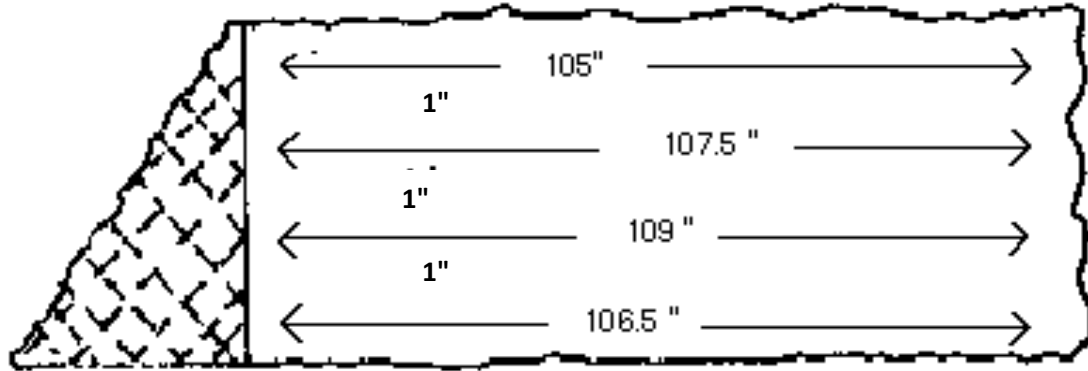
Figure 2. Height of Stack.



$$\text{Average Height} = (41" + 41.5" + 43" + 42.5" + 41") \div 5 = 41.8 \text{ inches}$$

- (2) **Average length of a rectangular stack determination:** Starting at the base, measure the length of the stack at approximate 1 foot intervals up to the top, or at four proportionately equal intervals if the stack is less than 3 feet high. (Minimum of 4 measurements shall be taken.) Calculate the average length. (See Figure 3.)

Figure 3. Length of Stack.



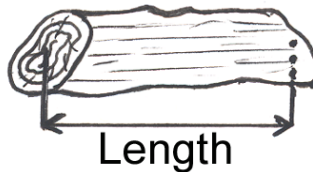
$$\text{Average Length} = (106.5" + 109" + 107.5" + 105") \div 4 = 107 \text{ inches}$$

- (3) **Average width of stack determination:** This dimension is calculated by averaging the length of individual pieces of wood. A representative random sample of the individual pieces shall be selected. If a triangular stack is combined with a rectangular stack, the sample shall be selected randomly from the entire stack. The minimum size of the sample shall be as shown in the following table.

Amount Represented	Number of Pieces
1/2 cord and less	12
More than 1/2 cord to 1 cord	24
Over 1 cord to 1-1/2 cords	36
Over 1 1/2 cords to 2 cords	48
Over 2 cords	48 plus 12 for each 1/2 cord or fraction thereof

Measure the length of the pieces, measuring from center-to-center, as shown in Figure 4. Calculate the average length.

Figure 4. Length of Angle-Cut Log.



$$\text{Average Length} = (18" + 18.25" + 19" + 17.75" + 18.5" + 18") \div 6 = 18.25 \text{ inches}$$

(b) Measurement of the triangular portion of a stack:

- (1) Measure the height and the base of the triangular portion. (See Figure 5.)

Figure 5. Triangular Measurements.

- (2) Average width of the stack is as previously calculated in Section 4535.2.(a)(3)

NOTE: Authority cited: Sections 12024.11, 12027 and 12107.1, Business and Professions Code. Reference: Sections 12024.11 and 12107.1, Business and Professions Code.

§ 4535.3. Calculate the volume:

- (a) Volume of the rectangular portion = average height of the stack x average length of the stack x average width of the stack.
(Example: 41.8" x 107" x 18.25" = 81,624.95 cubic inches.)
- (b) Volume of the triangular portion = height x base length x average width of the stack divided by 2.
(Example: 41" x 33" x 18.25" ÷ 2 = 12,346.125 cubic inches.)
- (c) Volume of the combined portions = volume of the rectangular portion + volume of triangular portion.
(Example: 81,624.95 cu in + 12,346.125 cu in = 93,971.075 cubic inches.)

NOTE: For stacks with multiple rows, the volume of the total stack is the sum of the volumes of the individual rows.

- (d) Volume of stack in cords = volume of stack in cubic inches divided by 221,184 cubic inches per cord.
(Example: 93,971.075 cu. in. ÷ 221,184 cu. in. per cord = 0.42 cords.)
- (e) Percentage of the cord = decimal fraction of the cord times 100.
(Example: 0.42 cords x 100 = 42% [Percent].)

TABLE OF EQUIVALENTS				
1 cubic foot = 1,728 cubic inches				
1 cord = 128 cubic feet = 221,184 cubic inches				
Common Fractions		Decimal Fractions		Percentages
1/8	=	.125	=	12.5%
1/4	=	.25	=	25%
3/8	=	.375	=	37.5%
1/2	=	.5	=	50%
5/8	=	.625	=	62.5%
3/4	=	.75	=	75%
7/8		.875		87.5%

NOTE: Authority cited: Sections 12024.11, 12027 and 12107.1, Business and Professions Code. Reference: Sections 12024.11 and 12107.1, Business and Professions Code.

§ 4536. Volumetric Test Procedure for Packaged Firewood with a Labeled Net Content of Four Cubic Feet or Less.

NOTE: A calibrated linear measure shall be used. All measurements shall be taken in increments no greater than 1/8 inch and rounded up, except as noted in 4536.1.(a).

Unless otherwise indicated, all measurements are to be taken without rearranging the wood or removing it from the package.

If the layers of wood are cross hatched or not ranked in discrete sections in the package, the wood shall be removed from the package and measured according to the procedures prescribed in Sections 4535.1 through 4535.3 of this regulation.

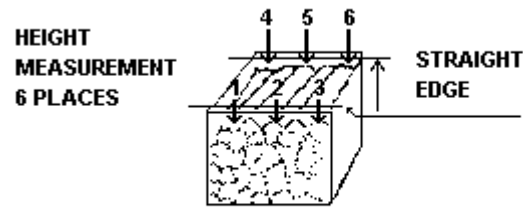
Lot compliance shall be determined using the sampling procedures in Chapter 11 of this Division, except that the maximum allowable variations for individual packages labeled by volume shall not be applied to packaged firewood.

NOTE: Authority cited: Sections 12024.11, 12027 and 12107.1, Business and Professions Code. Reference: Sections 12024.11 and 12107.1, Business and Professions Code; California Hotwood, Inc. v. Henry Voss, et al. (Super. Ct. San Joaquin County, 1991, No. 234613).

§ 4536.1. Boxed Firewood.

- (a) **Average height determination of wood within the box:** Open the box and measure the internal height of the box (h). Take three measurements (d) along each end of the stack by measuring from the bottom of a straight edge placed across the top of the box to the highest point on the two outermost top pieces of wood and the center-most top piece of wood rounding measurements down to the nearest 1/8 inch. However, if there are obviously pieces missing out of the top layer of wood, additional height measurements shall be taken at the highest point of the uppermost pieces of wood located at the midpoints between the three measurements on each end of the stack. (See Figure 6.) The average height of the stack is calculated by averaging these measurements and subtracting from the internal height of the box.

Figure 6.

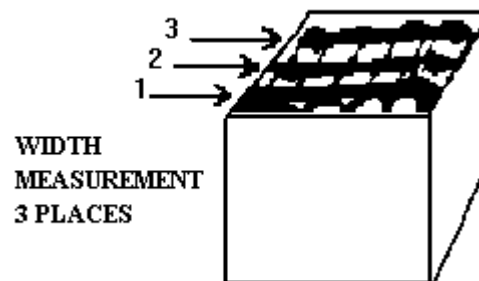


Calculate the average height of stack.

$$\text{Average Height of Stack} = h - [(d^1 + d^2 + d^3 + d^4 + d^5 + d^6) / 6]$$

- (b) **Average width of the wood within the box:** Determine the width of the stack of wood at three places along the top of the stack. These measurements shall be taken on both ends and in the middle of the box, measuring the inside distance from one side of the box to the other, perpendicular to the long axis of the wood. (See Figure 7.)

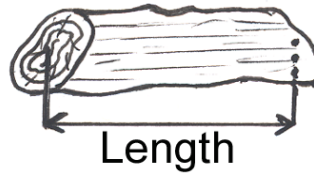
Figure 7.



Calculate the average width.

$$\text{Average Width} = (W^1 + W^2 + W^3) / 3$$

- (c) **Average length of the pieces of wood:** Remove the wood from the box and select the five pieces with the greatest girth. Measure the length of the five pieces, measuring from center-to-center, as shown in Figure 8.

Figure 8.

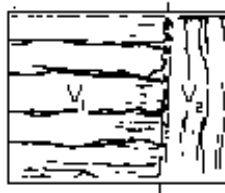
Calculate the average length of the five pieces.

$$\text{Average Length} = (L^1 + L^2 + L^3 + L^4 + L^5) / 5$$

(d) **Calculate the volume of the wood within the box.**

$$\text{Volume of Wood} = \text{Average Height} \times \text{Average Width} \times \text{Average Length} / 1728 \text{ In}^3 / \text{ft}^3$$

(c) For boxes of wood which are packed with the wood ranked in two discrete sections, which are perpendicular to each other, calculate the volume of wood in the box by determining the average height, width, and length as in (a), (b), and (c) above for each discrete section and totaling the calculated volumes of the two sections. Except that the width measurement for V_2 shall be taken from the inside edge of the box adjacent to V_2 to the plane separating V_1 and V_2 . (See Figure 9.)

Figure 9.

$$\text{TOTAL VOLUME} = V_1 + V_2$$

NOTE: Authority cited: Sections 12024.11, 12027 and 12107.1, Business and Professions Code. Reference: Sections 12024.11 and 12107.1, Business and Professions Code. California Hotwood, Inc. v. Henry Voss, et al. (Super. Ct. San Joaquin County, 1991, No. 234613).

§ 4536.2. Bundles and Bags of Firewood.

(a) **Average area of ends:** Secure a strap around each end of the bundle or bag of wood to prevent movement during testing and to provide a definite perimeter. Set one end of the bundle or bag on tracing paper large enough to cover the end completely. Draw a line around the perimeter of the bundle or bag on the tracing paper. Transfer the tracing paper to a template graduated in square inches. Count the number of square inches enclosed within the perimeter line (portions of square inches not completely within the perimeter line shall be estimated to the nearest one quarter square inch). Repeat this process on the opposite end of the bundle or bag. Calculate the average area.

$$\text{Average Area} = (\text{Area \#1} + \text{Area \#2}) / 2$$

NOTE: Two thin straps, one inch to two inches wide, with connecting buckles, and long enough to easily encircle the bundle or bag, should be used to secure the wood.

(b) **Average length of the pieces of wood:** Select the five pieces with the greatest girth. Measure the length of the pieces as shown in Figure 8 for boxed wood. Calculate the average length of the pieces of wood.

$$\text{Average Length} = (L^1 + L^2 + L^3 + L^4 + L^5) / 5$$

(c) **Calculate the volume of the wood.**

$$\text{Volume of Wood (In cu ft)} = \text{Average Area (In Inches)} \times \text{Average Length (In Inches)} / 1728 \text{ In}^3/\text{ft}^3$$

NOTE: Authority cited: Sections 12024.11, 12027 and 12107.1, Business and Professions Code. Reference: Sections 12024.11 and 12107.1, Business and Professions Code. California Hotwood, Inc. v. Henry Voss, et al. (Super. Ct. San Joaquin County, 1991, No. 234613).

Editor's Note: Effective July 1, 2017, CCR §§ 4535 through 4536.1. will be replaced with the following procedures in NIST Handbook 133 Paragraph 3.14. Firewood – Volumetric Test Procedure for Packaged Firewood with a Labeled Volume of 113 L [4 ft³] or Less and Stacked Firewood Sold by the Cord or Fractions of a Cord Pursuant to BPC § 12211.

Section 4600. National Uniformity, NIST Handbook 133 Chapter 3. Test procedures – For Packages Labeled by Volume, Paragraph 3.14. Firewood have been extracted from CCR Chapter 11 and appear in this document following § 4536.1.

3.14. (Effective July 1, 2017) Firewood – Volumetric Test Procedure for Packaged Firewood with a Labeled Volume of 113 L [4 ft³] or Less and Stacked Firewood Sold by the Cord or Fractions of a Cord.

Unless otherwise indicated, take all measurements without rearranging the wood or removing it from the package. However, if the layers of wood are crosshatched or not ranked in discrete sections in the package, remove the wood from the package, re-stack, and measure according to the procedures described in this section. For boxed firewood, it is the volume of the wood in the box that is determined not the volume of the box.

Note: The implementation date for paragraph 3.14. is effective July 1, 2017.

3.14.1. Test Equipment

Linear Measurement		
The maximum value of graduations on a ruler or tape shall be equal to or less than:		
For Testing	SI Units	U.S. Customary Units
Packaged Firewood	1 mm	¹ / ₁₆ in (0.0625 in)
Stacked Firewood	0.5 cm	¹ / ₈ in (0.125 in)

Other Equipment:

Except where a long tape measure is needed for measuring stacks of wood and unless otherwise noted below, a precision tempered steel ruler should be used for linear measurements. Current calibration certificates issued by a NIST recognized or accredited laboratory should be available for all measuring devices.

- To test boxes of firewood, use a straightedge and a 150 mm (6 in) tempered steel pocket ruler to measure the box headspace. A rigid 610 mm (24 in) tempered steel ruler is required to measure piece length and the dimensions of the box.
- To test bundles of firewood, use a rigid 610 mm (24 in) tempered steel ruler to measure typical piece length. If the circumference based auditing method is to be conducted, a precision 610 mm (24 in)

Chapter 10 - Quantity Control

diameter (pi) tape or flexible steel tape with 1 mm ($1/16$ in) graduations may be used to approximate the package volume for screening and audit purposes.

For testing stacks of firewood, a precision tape or long tape measure is used. For testing bundles and bags of firewood, the following equipment and materials are used in addition to the linear measures listed above:

- **Binding Straps:** Straps with ratchet type closures are easily tightened to secure the wood tightly. The binding straps are used to hold wood bundles together if the bundles need to be removed from the package/wrapping material.
- **Graph Paper:** 279.4 mm × 431.8 mm (11 in × 17 in) with 0.5 centimeter or $1/4$ inch squares. This paper is used for tracing and calculating the areas of the ends of a bundle of firewood. Prior to using any graph paper use a calibrated ruler to verify the dimensions of squares at several random points across the page.
- **Ruler:** 300 mm (12 in) with 0.5 cm ($1/4$ in) graduations. This ruler is used with the graph paper to calculate the area of the bundle ends.

(Amended 2016)

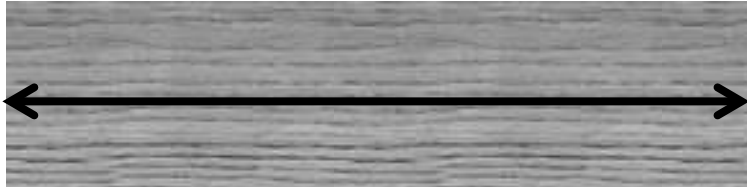
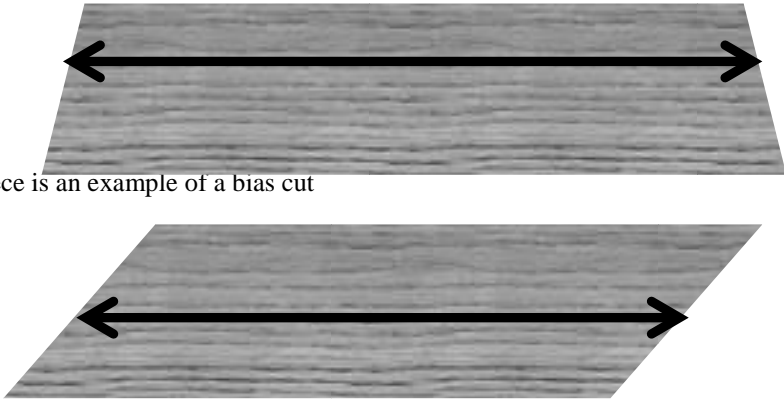
3.14.2. Test Procedure

General Instructions

- When testing packaged firewood Section 2.3.1. “Define the Inspection Lot.” Use a “Category A” sampling plan in the inspection; and select a random sample.
- Measurements shall be read to the smallest graduation on the ruler or tape. Round any value that falls between two graduations up to the higher value except when making headspace depth measurements in the test procedure for boxes where a value falling between two graduations is rounded down.
- Samples for Length. Use Table 3-5. “Minimum Number of Pieces Measured for Length” to determine the minimum number of pieces to measure to determine the average length of the firewood pieces in a package or stack.

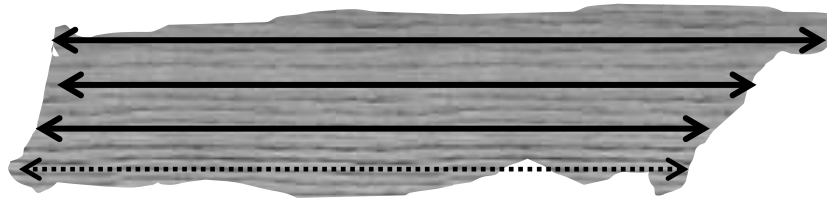
Table 3-5. Minimum Number of Pieces to be Measured for Length		
Volume		Minimum Number of Pieces to be Measured for Length*
1.	Packaged firewood 453 L (16 cu ft) ($1/8$ cord) or less	
a.	For packages with 12 pieces or less	All
b.	For packages with 13 to 50 pieces	At least 12 pieces
c.	For packages with more than 50 pieces	At least 24 pieces
2.	Stacked wood	At least 12 pieces for each $1/2$ cord or fraction thereof
<p>*Note: While the packages of firewood to be included in the sample must be selected using the random sampling techniques described in NIST Handbook 133, Section 2.3.4. “Random Sample Selection,” those techniques are not used in selecting the individual pieces for measurement of length. Since the packages were selected at random, the assumption is made that the length of any piece selected for measuring is generally representative of the other pieces that the packer cut or selected for inclusion in the package under inspection. When selecting pieces of wood for measurement, take them from different locations in the package or stack so they are representative of the total amount of wood under test.</p>		

- Measuring Procedures for Length. Use the instructions and graphics in Table 3-6. “Determining Piece Length” when measuring the length of the pieces to determine the average length of a piece of firewood based on its shape in a package or stack. If a piece of wood does not appear to fall within the examples shows, measure it as if it were an irregular shape and take three or more measurements and average them.

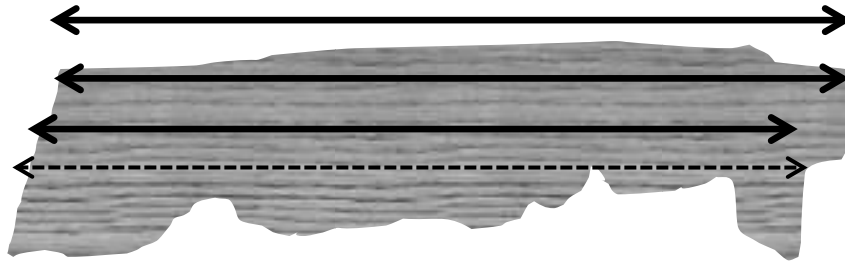
Table 3-6. Determining Piece Length	
(a) Uniform Shapes	
<p>Errors in the length measurement can result in a significant volume errors especially with the small quantities typical of packaged wood. When the pieces are generally cut in a uniform manner, a single measurement along the center line of the longitudinal axis is used to determine piece length. Take the measurement along a straight line between two points over solid wood.</p>	
(i)	<p>Most wood pieces are cut perpendicular to their longitudinal axis so one measurement taken from the face of one end to the face of the other end will provide an accurate length determination.</p> 
(ii)	<p>On pieces of wood with “reverse bias” and “bias” end cuts estimate where the center line of the piece is and then measure to these points as shown below. The intent of this measurement is to determine an “average” length that is assumed to fall along the center line of the piece. The top piece is an example of a “reverse” bias cut.</p>  <p>The bottom piece is an example of a bias cut</p>
(b) Irregular Shapes	
<p>When the pieces have irregular shapes, cuts, or shattered ends, it is necessary to take at least three measurements and average the results to obtain the length of the piece. Take the measurements along a straight</p>	

line between two points which cover solid wood that appear to be the shortest and longest dimensions and a third measurement at or near the center line of the piece.

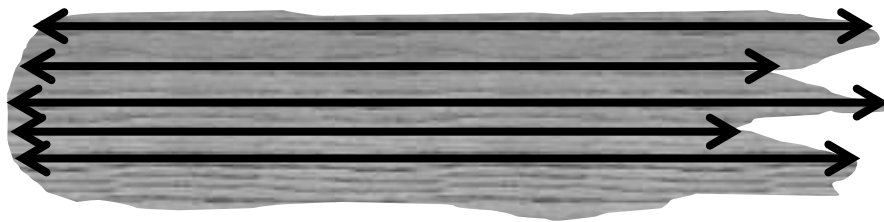
- (iii) This is piece has a bias cut end on the left and an irregular end on the right. The measurements are taken at at the longest and shortest points where the line crosses over solid wood. The lowest measurement (dotted line over the air space) is not used because it does not cross wood. Only the three upper measurements are used to calculate the average length for this piece unless additional measurements across solid wood are taken.



- (iv) This is a piece with a bias cut on the left and irregular end on the right. Note how the measurements are taken at the longest and shortest points where the line crosses over solid wood. The lowest measurement (the dotted line) would not be used because it does not crossover wood.



- (v) This piece of wood has a “shattered end.” Shattering occurs when wood is stressed beyond its breaking point and the end is not trimmed. The inspector will take additional measurements to account at the shortest point of the voids and longest points at the extensions. In this example, five measurements were taken and averaged to account for the voids and extensions.



a. Boxed Firewood

Note: A packer may place wrapped bundles of firewood in boxes for ease of handling as well as for display on retail store shelves. When a box contains a bundle of wrapped firewood, the volume of the bundle is verified using the test procedure in c. “Bundles and Bags.”

1. Follow Section 2.3.1. “Define the Inspection Lot.” Use a “Category A” sampling plan in the inspection; and select a random sample.
2. Open the box to determine the average height of wood.
3. Measure the internal height of the box. (See Figure 3-8. “Measuring the Internal Height of Box.”)

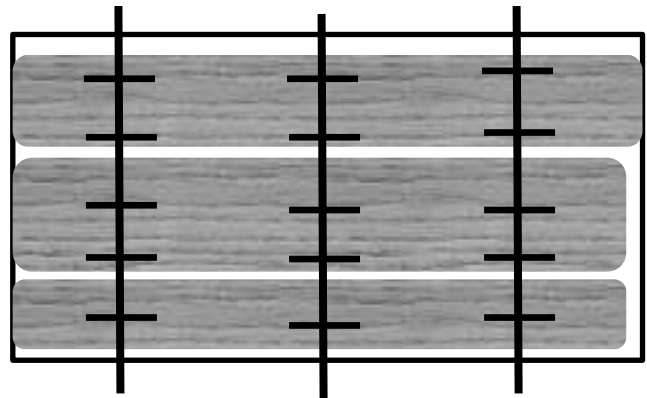


Figure 3-8. Measuring the Internal Height of Box

4. Determining the Height of the Wood. Take at least five measurements spaced at intervals along each end and center of the wood stack (record as “d₁, d₂ . . etc.”; taking at least 15 measurements). (See Figure 3-9. “Top View of the Box” – Measure at cross bars and Figure 3-9a. “Examples of the Headspace Measurement.”) Measure from the bottom of a straightedge placed across the top of the box to the highest point on the wood (round the measurements down to the nearest 0.5 cm [¹/₈ in] or less). Calculate the average height of the stack by averaging these measurements and subtracting the result from the internal height of the box using the following formula:

$$\text{Average Height of Wood Stack} = (\text{Internal Height of Box}) - (\text{Sum of Depth Measurements} \div \text{Number of Measurements})$$

Figure 3-9. Top View of the Box. Measure at the cross bars.



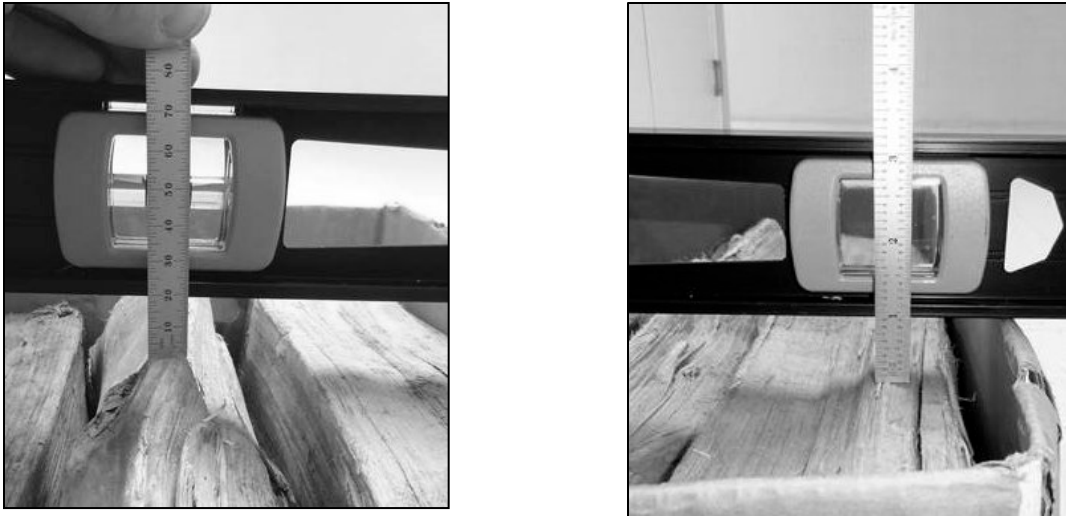


Figure 3-9a. Examples of the Headspace Measurement.

5. Width of Wood Stack. Open the box and measure the width of the wood stack. Take at least five measurements at intervals spaced along the length of the stack. Average these values to obtain an Average Width of Wood Stack. (See Figure 3-10. “Top View of the Box,” Measure at crosslines and Figure 3-10a. “Measuring the Width of the Firewood in a Box.”) You are measuring the width of the wood, not the width of the box

$$\text{Average Width of Wood Stack} = (W_1 + W_2 + W_3 + W_4 + W_5) \div 5$$

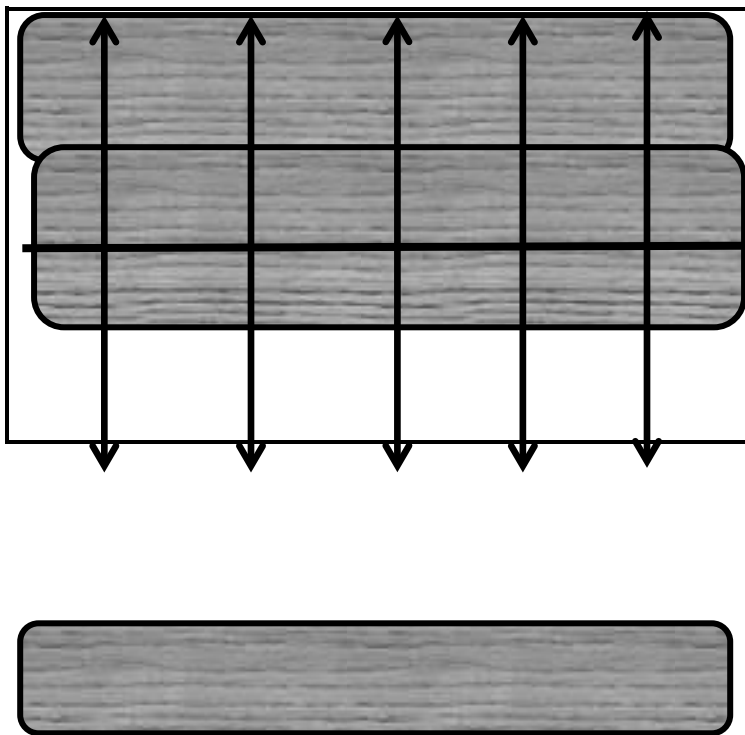


Figure 3-10. Top View of the Box. Measure at crosslines.

Figure 3-10a. Measuring the Width of the Firewood in a Box.



6. Individual Piece Length. Remove the wood from the package and measure the length of each piece of wood (see Table 3-5. “Minimum Number of Pieces to be Measured for Length”). If the piece of wood is uniform in shape, take at least one point-to-point measurement along the center line of the longitudinal axis (see Table 3-6. “Determining Piece Length, (a) Uniform Shapes” for examples) and record the value.

If the wood is irregularly shaped (see Table 3-6. “Determining Piece Length, (b) Irregular Shapes” for examples), take at least three measurements along a straight line between two points crossing solid wood that appear to be the shortest and longest dimensions, and a third at or near the center line of the piece. Calculate the average of the measurements to obtain the Average Individual Piece Length and record the length of the piece.

To determine Average Individual Piece Length (AIPL) of irregularly shaped pieces:

$$AIPL = (L_1 + L_2 + L_3) \div 3$$

After all pieces are measured, total the lengths and divide that total by the number of samples to obtain the Average Piece Length for the package.

To determine Average Piece Length (APL) for the package:

$$APL = (L_1 + L_2 + L_3 + L_n) \div (\text{Number of Pieces in Sample})$$

7. Use the average values for height, width, and length to calculate the volume of wood in the box.

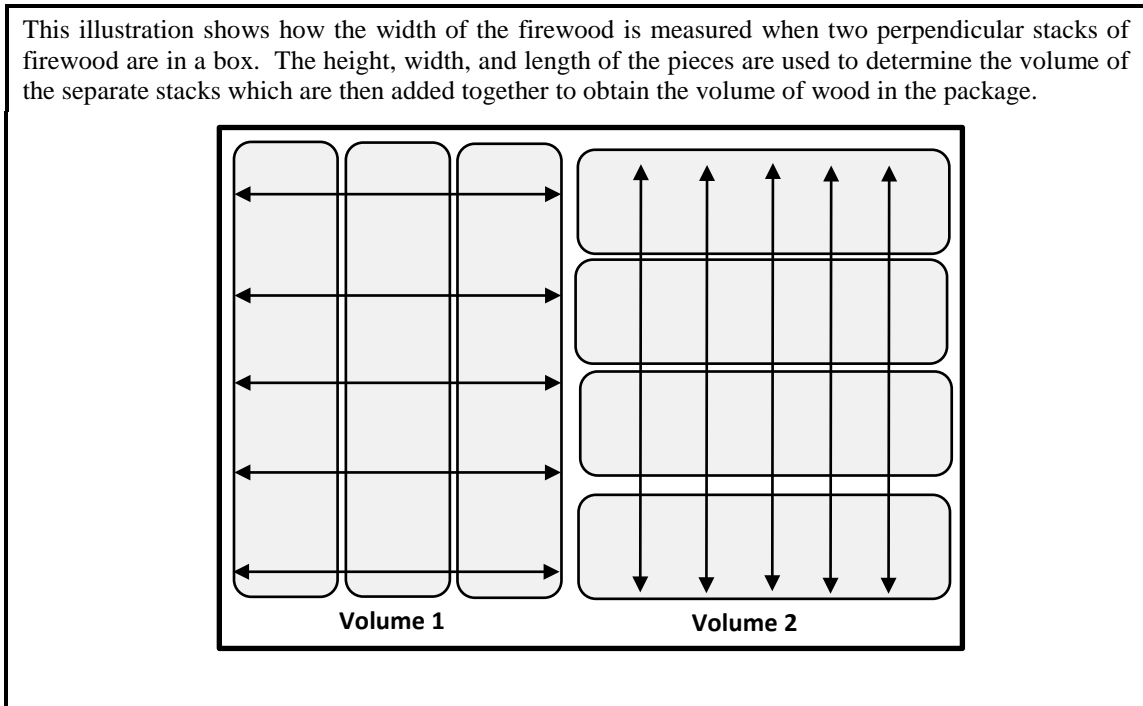
$$\text{Volume in liters} = (\text{height in mm} \times \text{width in mm} \times \text{length in mm}) \div 1,000,000$$

$$\text{Volume in cubic feet} = (\text{height in inches} \times \text{width in inches} \times \text{length in inches}) \div (1728)$$

Note: 1 cubic foot = 1728 in³, 1 cubic liter = 1,000,000 L³

8. For boxes of wood that are packed with the wood ranked in two discrete sections perpendicular to each other, calculate the volume of wood in the box as follows: (1) determine the average height, width, and length as in 1, 2, and 3 above for each discrete section, compute total volume, and (2) total the calculated volumes of the two sections. Compute total volume by adding Volume 1 (V_1) and Volume 2 (V_2) according to the following formula.

$$\text{Total Volume} = V_1 + V_2$$



b. Stacked Firewood

Bulk deliveries of firewood are typically required by law or regulation to be on the basis of cord measurements. The “cord” is defined as the amount of wood contained in a space of 128 ft³ when the wood is ranked and well stowed. The standard dimensions for a cord of wood are 4 ft × 4 ft × 8 ft but wood may be stacked and measured any configuration. See Figure 3-11. “A Cord of Wood” for an illustration of how a cord may be stacked.

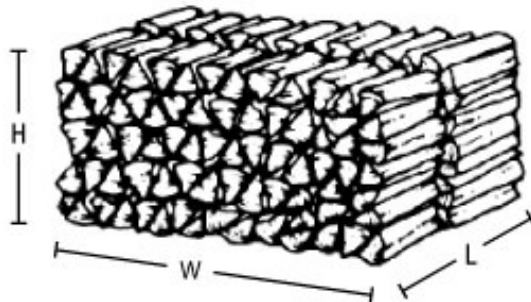


Figure 3-11. A Cord of Wood. A cord of wood measures 4 ft (height) × 4 ft (width) × 8 ft (length).

1. Wood Delivered to a Consumer. If a delivery ticket or sales receipt is available (these are often required by state regulation), review the delivery ticket or sales receipt and determine the quantity delivered. Identify the wood to be measured and verify the wood delivered was not mixed with wood that was already present at the location. Also, determine if the delivery was partial or complete (i.e., no additional deliveries are expected) and if any of the delivered wood has been used.

If necessary, stack the firewood in a ranked and well-stowed geometrical shape that facilitates volume calculations (i.e., rectangular). Any voids that will accommodate a piece of wood in the stack shall be deducted from the measured volume.

Note: The length measurements of the individual pieces may be made during the stacking process.

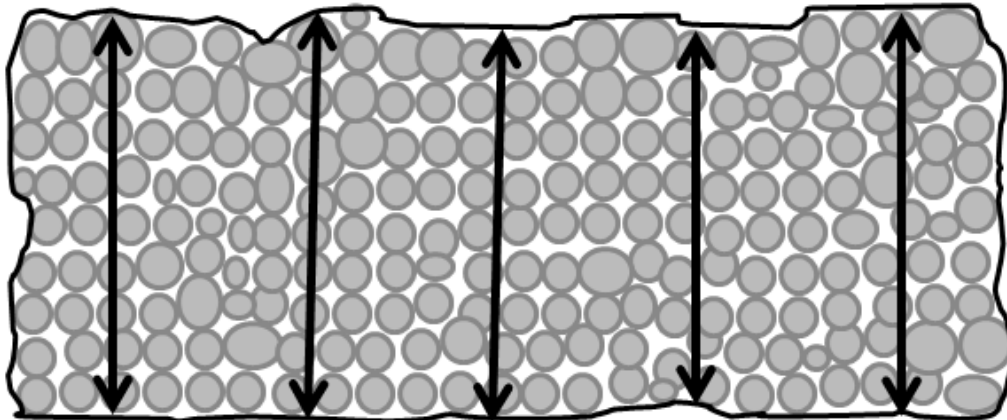
2. Determine the Average Measurements of the Stack. The number of measurements for each dimension given below is the minimum that should be taken.

- **Height of Stack.** A height measurement is the vertical distance between the top edge of a piece of wood in the top row and the bottom edge of a piece of wood on the bottom row. Start at one end of the front of the stack; measure the height of the stack at five equally spaced intervals (e.g., approximately 18 in to 24 in) along the length of stack. If the length of the stack is over 10 ft, take additional height measurements at equally spaced intervals along its length. If the height of the stack varies significantly (e.g., the pieces are stacked in peaks along the length of the stack), take additional height measurements. Calculate and record the average height for the front of the stack. Repeat the same height measurement procedure along the back of the stack and then calculate and record the average height for the back of the stack. Calculate the average height of the stack by averaging the two results. If the wood to be measured is stacked on a slope, take the height measurements at right-angles to the slope.

$$\text{Average Height}_{\text{Front}} = (h_1 + h_2 + h_3 + h_4 + h_5) \div 5$$

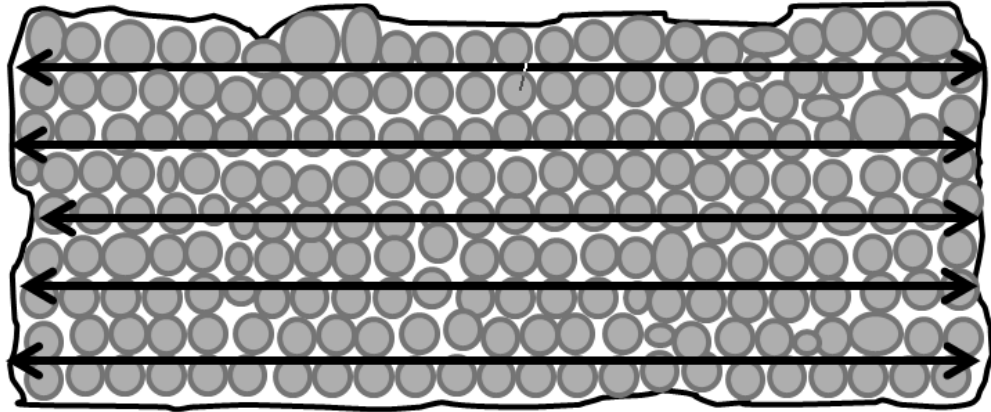
$$\text{Average Height}_{\text{Back}} = (h_1 + h_2 + h_3 + h_4 + h_5) \div 5$$

$$\text{Average Height of Stack} = \text{Average Height}_{\text{Front}} + \text{Average Height}_{\text{Back}} \div 2$$



Average Height Measurement (front and back)

- **Length of Stack.** A length measurement is the horizontal distance between the left edge of a piece of wood on the left side of the stack and the right edge of a piece of wood on the opposite side of the stack. Start at either side of the stack; measure the length of the stack in five equal intervals. Calculate and record the average length. If the length of the stack varies significantly (e.g., the ends of the stack bulge out along the height of the stack), take additional measurements.



Average Length Measurement (front and back)

- Calculate and Record the Average Length or the Front of the Stack. Repeat the length measurement procedure along the back of the stack and then calculate and record the average length for the stack.

$$\text{Average Stack Length}_{\text{Front}} = (l_1 + l_2 + l_3 + l_4 + l_5) \div 5$$

$$\text{Average Stack Length}_{\text{Back}} = (l_1 + l_2 + l_3 + l_4 + l_5) \div 5$$

$$\text{Average Stack Length} = (\text{Average Length}_{\text{Front}} + \text{Average Length}_{\text{Back}}) \div 2$$

- Width of Stack. This is Equal to the Average Length of Pieces that Make up the Width of the Stack. Refer to Table 3-5. “Minimum Number of Pieces to be Measured for Length” to determine how many pieces are to be measured. This dimension is calculated by averaging the length of individual pieces of wood in the stack. The wood can be stacked in a single or multiple rows. If the wood is stacked in several rows deep, select a representative random sample from each row. If the wood needs to be stacked, measure the pieces prior to stacking. If the wood is already stacked, select the pieces at random by moving up and down and across the stack. If it is necessary to remove the wood from a stack to measure the individual piece lengths, always complete the height and length measurements before disturbing the stacked wood.
3. Individual Piece Length. Table 3-5. “Minimum Number of Pieces to be Measured for Length” requires that at least 12 pieces of wood be measured for every half cord estimated to be in the stack.
- If the wood is uniform in shape, take at least one point-to-point measurement along the center line of the longitudinal axis (See Table 3-6. “Determining Piece Length, (a) “Uniform Shape” for examples) and record the value.
 - If the wood is irregularly shaped (see Table 3-6. “Determining Piece Length, (b) Irregular Shape” for examples), take at least three measurements along a straight line between two points crossing solid wood that appear to be the shortest and longest dimensions, and a third at or near the center line of the piece. Calculate the average of the measurements to determine Average Individual Piece Length (AIPL) of irregularly shaped pieces:

$$\text{AIPL} = (L_1 + L_2 + L_3) \div 3$$

- After all the pieces are measured, total the lengths and divide the total by the number of samples to obtain the Average Piece Length for the stack. To determine Average Piece Length (APL) for the package:

$$\text{APL} = (L_1 + L_2 + L_3 + \dots L_n) \div (\text{Number of Pieces in Sample})$$

4. Calculate Volume.

$Volume\ in\ liters = (Avg.\ Height\ [cm] \times Avg.\ Width\ [cm] \times Average\ Piece\ Length\ [cm]) \div 1000$

$Volume\ in\ cubic\ feet = (Avg.\ Height\ [in] \times Avg.\ Width\ [in] \times Average\ Piece\ Length\ [in]) \div 1728$

5. Supplemental Measurement of Stacked Wood:

- Volume of a Triangle Stack of Wood. To calculate the volume of a triangular stack, take at least two measurements (one each side) of the height and length, and five measurements of the width of the stack and average each result. Use this formula to calculate the volume.

$Volume\ of\ Triangular\ Stack = (Avg.\ Height \times Avg.\ Length\ of\ Base \times Avg.\ Width) \div 2$

- The volume of the triangular stack may be added to the volume of other stacks.



Figure 3-12. Triangular Stack of Wood.

Bundles and Bags



Figures 3-13. Firewood Bundle and Bag.

1. Follow Section 2.3.1. “Define the Inspection Lot.” Use a “Category A” sampling plan in the inspection; and select a random sample.

Test Note: To test a bag of firewood remove the wood from the bag and form a compact bundle and strap it as shown in Figure 3-14. “Bundle with Straps,” and follow the procedures for measuring a bundle.

2. Average Area of Bundle Ends:

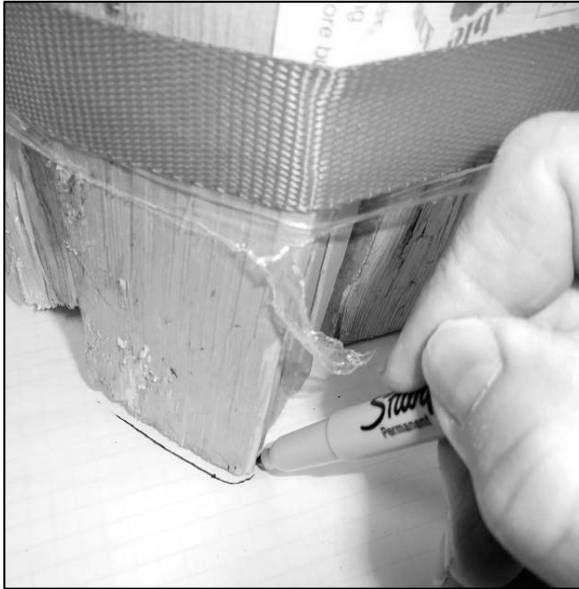
- Place a binding strap around each end of the bundle (or bag of wood) to prevent movement of the pieces during test. Place the straps approximately 10 cm (4 in) from the ends (See Figure 3-14. “Bundle with Straps” placed in 10 cm [4 in]) and tighten them securely.



Figure 3-14. Bundle with Straps Placed at 10 cm (4 in).

Notice: Do not use shrink wrap or packaging to define the perimeter because it can result in inaccurate measurements. If necessary, trim the shrink wrap back from the ends to allow for the bundle to sit flat on the graph paper.

- Set one end of the bundle or bag on graph paper large enough to cover the end completely. Draw a line around the outside of the wood perimeter on the graph paper using a sharp point marking pen (see Figure 3-15. “Tracing Perimeter of the Wood”).
- Count the number of square centimeters or square inches that are enclosed within the perimeter line. Determine portions of square centimeters or square inches not completely within the perimeter line to the nearest one-quarter square inch. Repeat this process on the opposite end of the bundle or bag.



Figures 3-15. Tracing the Perimeter of the Wood.

Examples:

- (1) Using $\frac{1}{4}$ square inch graph paper and a ruler with $\frac{1}{4}$ inch graduations, large blocks of the area within the perimeter are quickly measured. This is done by using the ruler to determine the length and then width of the area which are each divided by 0.25 ($\frac{1}{4}$ in) {or multiply 4×7.25 } to obtain the number of blocks in that dimension. These two values are multiplied to obtain the total number of blocks enclosed in the area. The areas in the partially covered blocks are rounded up or down to the nearest $\frac{1}{4}$ inch by enclosing the whole square and placing an x in the partial spaces which are included in the blocks where the area has been rounded up. One reason for squaring the graph squares is to simplify the counting.
- (2) Use a ruler to count graph squares, the rulers in Figure 3-16. "Perimeter of a Bundle Defined by the Wood" indicate the dimensions of the square are $7\frac{1}{4} \times 7\frac{3}{4}$ in. To obtain the number of blocks divide 7.25 by 0.25 {or multiply 4×7.25 }, to obtain the number of blocks along the left hand line ($7.25 \div 0.25 = 29$) The bottom line measures $7\frac{3}{4}$ in so $7.75 \div 0.25 = 31$ {or $4 \times 7.75 = 31$ }. Multiply the two values to obtain the total number of squares within the area which is: $29 \times 31 = 899$. To obtain square inches divide 899 by 16 (the number of $\frac{1}{4}$ inch graph squares in a square inch) or $899 \div 16 =$ for area of 56.19 in^2 for this area of the bundle.
- (3) Continue to divide the area into blocks to make counting easier and then count the blocks in the remaining areas and sum these values to obtain the total. See the example in Figure 3-16. "Perimeter of a Bundle of Defined by the Wood." The total number of blocks was calculated by adding:

$$46 + 45 + 899 + 25 + 8 + 54 = 1177 \text{ squares} \div 16 = 73.56 \text{ square inches for this end of the bundle.}$$

$$\text{Calculate the Average Area: Average Area} = (\text{Area}_1 + \text{Area}_2) \div 2$$

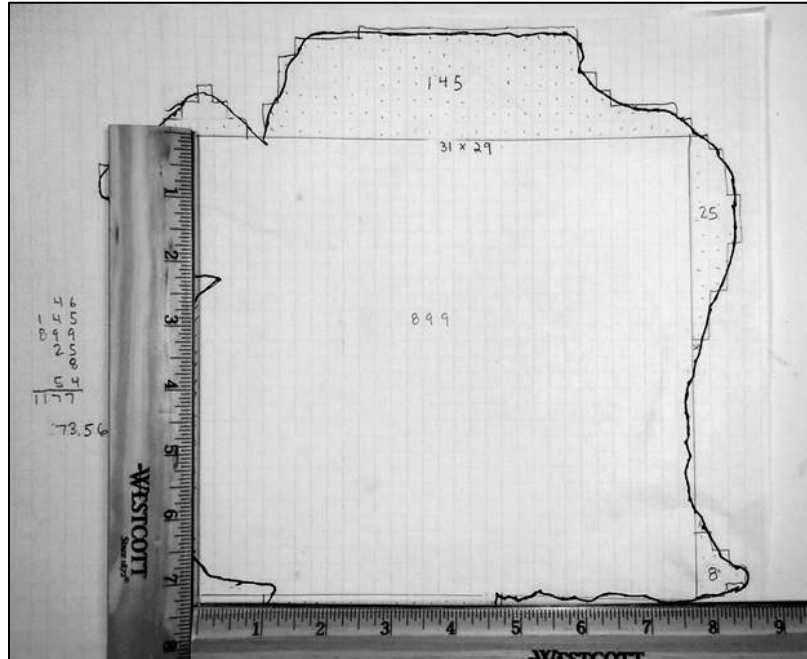


Figure 3-16. Perimeter of a Bundle as Defined by the Wood.

3. Average Length of the Pieces of Wood. Individual piece length, remove the wood from the package and measure the length of each piece of wood (see Table 3-5. “Minimum Number of Pieces to be Measured for Length” for the number of pieces to be measured.) If the piece of wood is uniform in shape, take at least one point-to-point measurement along the center line of the longitudinal axis (see Table 3-6. “Determining Piece Length,” (a) Uniform Shapes for examples) and record the value.
 - If the wood is irregularly shaped (see Table 3-6. “Determining Piece Length,” (b) Irregular Shapes for examples), take at least three measurements along a straight line between two points crossing solid wood that appear to be the shortest and longest dimensions, and a third at or near the center-line of the piece. Calculate the average of the measurements to obtain the Average Individual Piece Length and record the length of the piece.

To determine Average Individual Piece Length (AIPL) of irregularly shaped pieces:

$$AIPL = (L_1 + L_2 + L_3) \div 3$$

Note: If length measurements are made in millimeters divide the total by 10 to obtain centimeters.

- After all pieces are measured, total the lengths and divide that total by the number of samples to obtain the Average Piece Length for the package.

To determine Average Piece Length (APL) for the package:

$$APL = (L_1 + L_2 + L_3 + \dots L_n) \div (\text{Number of Pieces in Sample})$$

4. Use the average values for height, width, and length to calculate the volume of wood in the bundle or bag.
 - Calculate Volume:

$$\text{Volume in liters} = (\text{Average Area [cm}^2\text{]} \times \text{Average Length [cm]}) \div 1000$$

$$\text{Volume in cubic feet} = (\text{Average Area [in}^2\text{]} \times \text{Average Length [in]}) \div 1728$$

Note: 1 Cubic Foot = 1728 in³, 1 L³ = 1000 cm

3.14.3. Evaluation of Results

Follow Section 2.3.7. “Evaluate for Compliance” to determine lot conformance.

Note: Specified in Appendix A, Table 2-10. “Exceptions to the Maximum Allowable Variations for Textiles, Polyethylene Sheeting and Film, Mulch and Soil Labeled by Volume, Packaged Firewood and Stove Wood Labeled by Volume, and Packages Labeled by Count with 50 Items or Fewer.”

Field Audit Procedure:

A circumference estimating method can be used for quickly identifying potentially short measure bundles. The procedure is based on measuring the circumference of the package ends and calculating the areas without using graph paper. It shall be used for audit purposes only and must not be used for official inspection.

Circumference Estimating Method:

1. After the bundle or bag is secured, use a flexible measuring tape to measure the circumference near each end of the bundle or bag of firewood. Using one movement, extend the measuring tape around the end of the bundle or bag to obtain its circumference. The tape must be pulled tight. If the wood at the ends of a bag or bundle is not accessible due to plastic wrapping, the wrapping should be moved away from the ends so the measuring tape can be placed tightly around the bundle so circumference measurements can be taken.



Figure 3-17. Strapping the Ends of a Bundle.

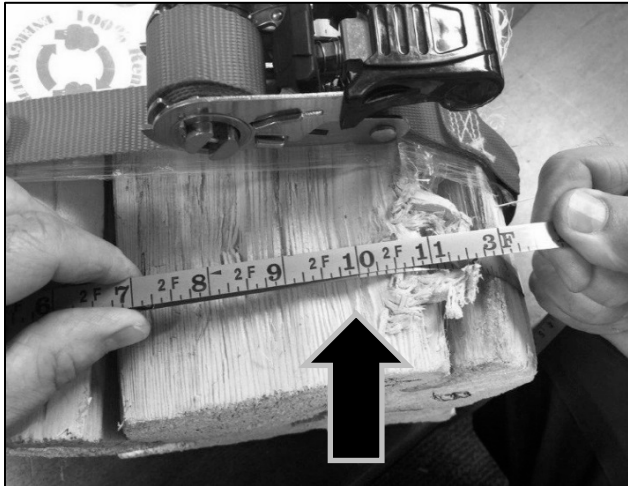


Figure 3-17a. Measuring the Circumference of the Bundle. At the point of the arrow, the circumference of the bundle is 2 ft 10 in (34 in).

Note: The tape used has a blank end so the “0” line is visible immediately under the 10 in mark.

2. Calculate the Average Circumference:

$$\text{Average Circumference} = (\text{circumference}_1 + \text{circumference}_2) \div 2$$

Example:

If circumference₁ is 34 in and circumference₂ is 33.75 in then:

$$\text{Average Circumference: } 34 + 33.75 \div 2 = 33.875 \text{ in}$$

3. Calculate the Radius:

$$\text{Radius} = \text{Average Circumference} \div 2\pi$$

$$\text{Where: } \pi = 3.1415$$

Example:

$$\text{radius} = 33.875 \div (2 \times \pi \text{ or } 6.283) = 5.39 \text{ in}$$

4. Calculate the Average Area

$$\text{Average Area} = \pi r^2$$

Example:

$$\text{Average Area} = 3.1415 \times 5.39^2 \text{ (or } 29.06) = 91.3 \text{ in}^2$$

5. Calculate the Average Length of the Pieces:

Average length of the pieces of wood – measure the length of several pieces of wood in the bundle or bag. Measurements are to be taken from center to center at the end of each piece.

Then calculate the average:

$$\text{Average length} = \text{sum of the length of all pieces} \div \text{number of pieces}$$

6. Calculate Volume:

$$\text{Volume in liters} = (\text{Average area [cm}^2\text{]} \times \text{Average Length [cm]}) \div 1000$$

$$\text{Volume in cubic feet} = (\text{Average Area [in}^2\text{]} \times \text{Average Length [in]}) \div 1728$$

Example:

Assume the Average Length of the Pieces is 16 in and Average Area is 91.3 in²

$$\text{Bundle Volume} = 91.3 \text{ in}^2 \times 16 \text{ in} = 1460 \text{ in}^3 \text{ or } 0.84 \text{ ft}^3$$

If results indicate that the sample fails, conduct further testing using the reference test procedure for bundles and bags. Do not take any legal action based solely on this audit procedure.

Note: The implementation date for this is effective July 1, 2017.

(Amended 2016)

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