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## Introduction

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### A. Source

The information and procedures in this handbook comprise all of those adopted by the National Conference on Weights and Measures, Inc. (NCWM). Contact NCWM at:

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The NCWM is supported by the National Institute of Standards and Technology (NIST), which provides its Executive Secretary and publishes its documents. NIST also develops technical publications for use by weights and measures agencies; these publications may subsequently be endorsed or adopted by the NCWM or its members.

This handbook is recommended by NCWM for adoption by states when reviewing or amending their official laws and regulations on testing the net contents of packaged goods. A similar recommendation is made with regard to the local jurisdictions within a state in the absence of the promulgation of such laws and regulations at the state level.

(Amended 2019)

### B. Purpose

This handbook has been prepared as a procedural guide for the compliance testing of net content statements on packaged goods. Compliance testing of packaged goods is the determination of the conformance of the results of the packaging, distribution, and retailing process (the packages) to specific legal requirements for net content declarations. This handbook has been developed primarily for the use of government officials. However, commercial and industrial establishments packaging, distributing, and selling commodities will find this handbook useful.

In conducting compliance testing, the conversion of quantity values from one measurement system to another (e.g., from the metric system to the U.S. customary system) should be handled with careful regard to the implied correspondence between the accuracy of the data and the number of digits displayed. In all conversions, the number of significant digits retained should ensure that accuracy is neither sacrificed nor exaggerated. For this 2020 edition of NIST Handbook 133, “Checking the Net Content of Packaged Goods” all dimensions for test procedures, devices, or environments have been rounded to two significant digits (e.g., 2.5 cm to 1.0 in) or to a precision level applicable to the test equipment (e.g., 200 kPa for 25 psi and 35 MPa for 5000 psi).

### C. Amendments

Amendments to NIST Handbook 133 are deliberated and developed by NCWM’s Committee on Laws and Regulations before presentation to the general membership for a vote. In some instances, amendments that significantly affect other NIST Handbooks may be processed jointly by two or more committees.

Amendments to the handbooks are made in accordance with NCWM procedures and policies. The process begins at the regional weights and measures association meetings in the fall of each year and is culminated at the NCWM Annual Meeting in July. After passing through one or more of the regional associations, the proposed amendment is placed on the agenda of the appropriate NCWM committee for consideration at the

NCWM’s Interim Meeting in January. After final deliberation and development by the committee, the amendment may be presented to the membership for a vote at the NCWM Annual Meeting in July. The NCWM policy provides for exceptions to the process to accommodate urgent or priority items. NIST staff provides technical assistance and advice throughout the process.

The policy is available on the NCWM website at [www.ncwm.com](http://www.ncwm.com). For information on the regional weights and measures associations, visit [www.ncwm.com/other-links](http://www.ncwm.com/other-links).

#### **D. Revisions to the Handbook**

NIST publishes a new edition of this handbook after significant changes are made. If NIST determines that amendments made by NCWM were minor or editorial in nature an annual publication will not be published. Instead, NIST will issue a notice that the current edition is still valid and will publish a list of the changes on the NIST website.

#### **E. Annotation**

Beginning in 1971, amendments or additions to sections in the handbook are annotated at the end of each section (e.g., “Amended 1982”) as a service to those states that are planning to update their own laws or regulations. The references to each revision and the year will enable government officials and industry members to trace the rationale for the changes by referring to the “Report of the XXX National Conference on Weights and Measures (also known as the NCWM Annual Report) for the year indicated and make decisions regarding adoptions and amendments to their laws and regulations.

#### **F. Effective Enforcement Dates of Regulations**

Unless otherwise specified, new or amended sections are intended to become effective and subject to enforcement on January 1 of the year following adoption by NCWM.

#### **G. Section References**

In most references made to specific sections or subsections in this handbook, the word “Section” followed by the section number is used.

#### **H. The International System of Units**

The “International System of Units,” “SI,” or “SI Units” means the modernized metric system as established in 1960 by the General Conference on Weights and Measures (CGPM). In 1988, Congress amended the Metric Conversion Act of 1975 (see Section 5164 of Public Law 100-418) to declare that it is the policy of the United States to designate the metric system of measurement as the preferred measurement system for U.S. trade and commerce, and it further defined “the metric system of measurement” to be the International System as established by the CGPM and as interpreted or modified for the United States by the Secretary of Commerce. (see Metric Conversion Law 15 U.S.C. 205; NIST Special Publication (SP) 330, “The International System of Units (SI); NIST SP 814, “Guide for the Use of the International System of Units (SI); Interpretation of the International System of Units [the Metric System of Measurement] for the United States in the “Federal Register” of May 16, 2008, [“Federal Register” Vol. 73, No. 96] or subsequent revisions). In 1992, Congress amended the Federal Fair Packaging and Labeling Act (FPLA) to require certain consumer commodities to include the appropriate SI units along with the customary inch-pound units in their quantity statements.

(Amended 2019)

**I. “Mass” and “Weight”** [NOTE 1, page 3]

The mass of an object is a measure of the object’s inertial property or the amount of matter it contains. The weight of an object is a measure of the force exerted on the object by gravity or the force needed to support it. The pull of gravity on the earth gives an object a downward acceleration of about 9.8 m/s<sup>2</sup>. In trade and commerce and everyday use, the term “weight” is often used as a synonym for “mass.” The “net mass” or “net weight” declared on a label indicates that the package contains a specific amount of commodity exclusive of wrapping materials. The use of the term “mass” is predominant throughout the world and is becoming increasingly common in the United States.

**J. Use of the Terms “Mass” and “Weight”** [NOTE 1, page 3]

When used in this handbook, the term “weight” means “mass.” The term “weight” appears when U.S. customary units are cited or when both inch-pound and SI units are included in a requirement. The terms “mass” or “masses” are used when only SI units are cited in a requirement. The following note appears where the term “weight” is first used in a law or regulation.

**NOTE 1:** *When used in this law (or regulation), the term “weight” means “mass.” (see paragraphs I. “Mass” and Weight and J. Use of the Terms “Mass” and “Weight” in the Introduction section of NIST Handbook 133 for an explanation of these terms.)*

(Introduction added 2015)

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