

NIST Handbook 130, “B. Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality,” 2018 edition**Section 2. Non-Food Products**

Editorial correction to **Section 2.16.3.4. Compressed Gases such as Oxygen, Argon, Nitrogen, Helium, and Hydrogen.**

2.16. Compressed or Liquefied Gases in Refillable Cylinders.

2.16.1. Application. – This section does not apply to disposable cylinders of compressed or liquefied gases.

2.16.2. Net Contents. – The net contents shall be expressed in terms of cubic meters or cubic feet, kilograms, or pounds and ounces. See Section 2.21. Liquefied Petroleum Gas for permitted expressions of net contents for liquefied petroleum gas. A standard cubic foot of gas is defined as a cubic foot at a temperature of 21 °C (70 °F) and a pressure of 101.35 kilopascals (14.696 psia), except for liquefied petroleum gas as stated in Section 2.21.

2.16.3. Cylinder Labeling. – Whenever cylinders are used for the sale of compressed or liquefied gases by weight, or are filled by weight and converted to volume, the following shall apply:

2.16.3.1. Tare weights.

- (a) **Stamped or Stenciled Tare Weight.** – For safety purposes, the tare weight shall be legibly and permanently stamped or stenciled on the cylinder. All tare weight values shall be preceded by the letters “TW” or the words “tare weight.” The tare weight shall include the weight of the cylinder (including paint), valve, and other permanent attachments. The weight of a protective cap shall not be included in tare or gross weights. The Code of Federal Regulations Title 49, Section 178.50-22 requires the maker of cylinders to retain test reports verifying the cylinder tare weight accuracy to a tolerance of 1 %.
- (b) **Tare Weight for Purposes of Determining the Net Contents.** – The tare weight used in the determination of the final net contents may be either:
 - (1) the stamped or stenciled tare weight; or
 - (2) the actual tare determined at the time of filling the cylinder. If the actual tare is determined at the time of filling the cylinder, it must be legibly marked on the cylinder or on a tag attached to the cylinder at the time of filling.
- (c) **Allowable difference.** – If the stamped or stenciled tare is used to determine the net contents of the cylinder, the allowable difference between the actual tare weight and the stamped (or stenciled) tare weight, or the tare weight on a tag attached to the cylinder for a new or used cylinder, shall be:
 - (1) ½ % for tare weights of 9 kg (20 lb) or less; or
 - (2) ¼ % for tare weights of more than 9 kg (20 lb).

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- (d) **Average requirement.** – When used to determine the net contents of cylinders, the stamped or stenciled tare weights of cylinders at a single place of business found to be in error predominantly in a direction favorable to the seller and near the allowable difference limit shall be considered to be not in conformance with these requirements.

2.16.3.2. Acetylene Gas Cylinder Tare Weights. – Acetone in the cylinder shall be included as part of the tare weight.

2.16.3.3. Acetylene Gas Cylinder Volumes. – The volumes of acetylene shall be determined from the product weight using approved tables such as those published in NIST Handbook 133 or those developed using 70 °F (21 °C) and 14.7 ft³ (101.35 kPa) per pound at 1 atmosphere as conversion factors.

2.16.3.4. Compressed Gases such as Oxygen, Argon, Nitrogen, Helium, and Hydrogen. – The volumes of compressed gases such as oxygen, argon, nitrogen, helium, or hydrogen shall be determined using ~~the tables and procedures given in NIST Technical Note 1079, Tables of Industrial Gas Container Contents and Density for Oxygen, Argon, Nitrogen, Helium, and Hydrogen~~ NIST Standard Reference Database 23 “Reference Fluid Thermodynamic and Transport Properties Database” (REFPROP) (see www.nist.gov/srd/REFPROP) and supplemented by additional procedures and tables in NIST Handbook 133.

(Added 1981) (Amended 1990)