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## 2022 Amendments

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The following table lists the codes, paragraphs, and pages in which the 107<sup>th</sup> National Conference on Weights and Measures adopted amendments. In the column headed “Action,” changes are noted as “added,” “amended,” “deleted,” or “renumbered.” Each code, section, or paragraph that has been changed will be noted as “Added 2022” or “Amended 2022.”

| Section    | Code   | S&T Item No.   | Paragraph                                      | Action  | Page                |
|------------|--|--|--|---|---------------------|
| 1.10.      | General  | GEN-22.1   | G-A.1.   | Amended   | 1-3                 |
| 3.30.      | Liquid-Measuring Devices   | LMD-21.1   | Table S.2.2.                                   | Amended   | 3-13                |
|            |  | LMD-22.1   | Table T.2.                                     | Amended   | 3-21                |
| 3.32.      | Liquified Petroleum Gas and Anhydrous Ammonia Liquid-Measuring Devices | LPG-22.1   | A.1.   | Amended   | 3-47                |
| 3.37.      | Mass Flow Meters   | MFM-22.1   | Table T.2.                                     | Amended   | 3-119               |
| 3.40.      | Electric Vehicle Fueling Systems                                       | EVF-22.1 (Priority Item Added to Committee Agenda June 24, 2022) | Entire Code                                    | Code upgraded from tentative to permanent and preamble modified | 3-151 to 3-164      |
|            |  | EVF-20.1   | S.1.3.1., S.1.3.2.                             | Amended   | 3-154               |
|            |  | EVF-22.1 (Priority Item Added to Committee Agenda June 24, 2022) | S.2.7., N.5.2., and T.2.1.                     | Amended   | 3-156, 3-160, 3-161 |
| 5.54.      | Taximeters   | TXI-22.1   | Table S.5.                                     | Amended   | 5-32                |
| Appendix D | Definitions  | EVF-22.1 (Priority Item Added to Committee                       | alternating current (AC);<br>ampere;<br>creep; | Added   | D-6 to D-34         |

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|  |  | <p>Agenda<br/>June 24,<br/>2022)</p> | <p>current;<br/>direct current (DC);<br/>electric vehicle, plug-in;<br/>electric vehicle supply equipment (EVSE);<br/>electricity as vehicle fuel;<br/>energy;<br/>energy flow;<br/>EVSE field reference standard;<br/>hertz (Hz);<br/>kilowatt (kW);<br/>kilowatt-hour (kWh);<br/>load, full;<br/>load, light;<br/>master meter, electric;<br/>megajoule (MJ);<br/>meter, electricity;<br/>metrological components;<br/>nationally recognized testing laboratory (NRTL);<br/>ohm (<math>\Omega</math>);<br/>percent registration;<br/>power factor;<br/>serving utility;<br/>starting load;<br/>submeter;<br/>test accuracy – in-service;<br/>test amperes (TA);<br/>thermal overload protector;<br/>vehicle connector;</p> |  |  |
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|  |  |          |   |  |             |
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|  |  |          | vehicle coupler;<br>vehicle inlet;<br>volt;<br>watt;<br>watt-hour (Wh)  |  |             |
|  |  |          | audit trail;<br>calibration parameter;<br>configuration parameter;<br>equipment, commercial;<br>event counter;<br>event logger;<br>face;<br>minimum measured quantity (MMQ);<br>non-resettable totalizer;<br>primary indicating element or recording element;<br>remote configuration capability;<br>retail device;<br>unit price | Amended by adding “3.40” to the list of applicable codes to which the definition applies | D-7 to D-32 |
|  |  |          | recorded representation;<br>and<br>recording element  | Added new definitions applicable to Section 3.40   | D-27        |
|  |  | OTH-22.2 | face  | Amended  | D-15        |
|  |  | LPG-22.1 | liquefied petroleum gas retail motor-fuel device  | Added  | D-18        |
|  |  | LPG-22.1 | motor-fuel device or motor-fuel dispenser or retail motor-fuel device   | Amended  | D-21        |

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**2022 Editorial Changes**

| SECTION | CODE                                    | PARAGRAPH   | ACTION  | PAGE |
|---------|---|---|---|------|
| 1.10    | General Code                            | G-S.5.6.1. Indicated and Recorded Representation of Units. – Appropriate abbreviations.   | <b>Note:</b> SP 811 can be viewed or downloaded at <a href="http://www.nist.gov/pml/special-publication-811">www.nist.gov/pml/special-publication-811</a> or by going to <a href="http://www.nist.gov/pml/owm">www.nist.gov/pml/owm</a> and selecting <del>Weights and Measures</del> “Publications”, then selecting “NIST Special Publications,” and then clicking on the link below “NIST (SP 811): Guide for the Use of the International System of Units (SI)” showing the year of the current edition. | 1-8  |
| 2.20    | Scales                                  | Table 1M. Minimum Travel of Weighbeam of Beam Scale Between Limiting Stops                | <del>≤ 30 or less</del><br>> 30+ to 50, <b>inclusive</b><br>> 50+ to 100, <b>inclusive</b><br>> <del>Over</del> 100   | 2-10 |
|         |   | Table 1. Minimum Travel of Weighbeam of Beam Scale Between Limiting Stops                 | <del>≤ 12 or less</del><br>> 12+ to 20, <b>inclusive</b><br>> 20+ to 40, <b>inclusive</b><br>> <del>Over</del> 40   | 2-10 |
|         |   | Table 4. Minimum Test Weights and Test Loads  | <del>≥ 20 001 kg+</del><br><del>≥ 40 001 lb+</del>  | 2-35 |
|         |   | Table 5. Maintenance and Acceptance Tolerances for Unmarked Postal and Parcel Post Scales | 0 to 4, <b>inclusive</b> *<br>> <del>over</del> 4*<br><br>0 to 1, <b>inclusive</b><br>> <del>over</del> 1<br>0 to 7, <b>inclusive</b><br>> 7+ to 24, <b>inclusive</b><br>> 24+ to 30, <b>inclusive</b><br>> <del>over</del> 30  | 2-41 |
| 3.33    | Hydrocarbon Gas Vapor-Measuring Devices | UR.2.3. Correction for Elevation.   | The appropriate altitude correction factor from Table 2M. Corrections for Altitude, Metric Units or Table 2. Corrections for Altitude, U.S. Customary Units shall be used. (The table is modified from <del>NIST Handbook 117</del> <b><u>NBS Handbook 117, Examination of Vapor-Measuring Devices for Liquefied Petroleum Gas.</u></b> )   | 3-71 |

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| 3.39       | Hydrogen Gas-Measuring Devices   | Headers        | Remove the word “Code” from the headers to be consistent with other codes in NIST Handbook 44.   | 3-139 to 3-150 |
|            |  | A. Application | (a) Devices used for dispensing a hydrogen gas with a hydrogen fuel index lower than 99.97 % and concentrations of specified impurities that exceed level limits in the latest version of SAE International J2719 <b><u>“Hydrogen Fuel Quality for Fuel Cell Vehicles.”</u></b>  | 3-141          |
| Appendix B | Units and Systems of Measurement – Their Origin, Development, and Present Status | Multiple       | <ul style="list-style-type: none"> <li>• Several references and citations were updated to provide URL links to NIST publications, Federal Register Notices, and federal statutes and code of regulations.</li> <li>• Clarified that the BIPM Consultative Committees of Units publish practical methods, known as <i>Mise en Pratique</i>, to realize the seven SI base units.</li> <li>• Added additional examples of derived units.</li> <li>• Additional information was added to fully describe the retirement of the U.S. survey foot.</li> <li>• Clarified it is incorrect to describe traditional units used in the United States as “Imperial” or “British” and that “U.S. customary” is the correct term.</li> <li>• Removed several unnecessary pronouns and replaced with specific nouns.</li> <li>• Added references to NIST online calibration service resources.</li> <li>• Aligned content for length, mass, and capacity to better reflect current NIST and State Laboratory Program participant laboratories calibration services.</li> </ul> | B-6 to B-14    |
| Appendix C | General Tables of Units  |                | <ul style="list-style-type: none"> <li>• Information was expanded to fully describe the retirement of the U.S. survey foot, including 3 new tables that present U.S. survey unit conversion factors in terms of the International foot. Section 2 surveying</li> </ul>   | C-1 to C-30    |

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|--|--|--|--|--|
|  |  |  | <ul style="list-style-type: none"> <li>• length and area tables were reformatted to align with the U.S. survey foot retirement FRN.</li> <li>• Several NIST publications, Federal Register Notices, and federal statutes and code of regulations references were updated in the footnotes. Website URLs were verified and updated.</li> <li>• Unit symbols and abbreviations were added to the “starting units” column to improve usability.</li> <li>• Removed the ångström unit to align with the latest edition of the BIPM SI Brochure and NIST SP 330, as it was eliminated in 2019.</li> <li>• Added footnote guidance for users to consult federal/state laws and regulations and industry documentary standards to confirm the barrel quantity used for a specific application.</li> </ul> |  |
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