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## American National Standards

### Call for comment on proposals listed

This section solicits public comments on proposed draft new American National Standards, including the national adoption of ISO and IEC standards as American National Standards, and on proposals to revise, reaffirm or withdraw approval of existing American National Standards. A draft standard is listed in this section under the ANSI-accredited standards developer (ASD) that sponsors it and from whom a copy may be obtained. Comments in connection with a draft American National Standard must be submitted in writing to the ASD no later than the last day of the comment period specified herein. Such comments shall be specific to the section(s) of the standard under review and include sufficient detail so as to enable the reader to understand the commenter's position, concerns and suggested alternative language, if appropriate. Please note that the ANSI Executive Standards Council (ExSC) has determined that an ASD has the right to require that interested parties submit public review comments electronically, in accordance with the developer's procedures.

#### Ordering Instructions for "Call-for-Comment" Listings

1. **Order from the organization indicated for the specific proposal.**
2. **Use the full identification in your order, including the BSR prefix; for example, Electric Fuses BSR/SAE J554.**
3. **Include remittance with all orders.**
4. **BSR proposals will not be available after the deadline of call for comment.**

Comments should be addressed to the organization indicated, with a copy to the Board of Standards Review, American National Standards Institute, 25 West 43rd Street, New York, NY 10036. Fax: 212-840-2298; e-mail: psa@ansi.org

\* Standard for consumer products

## Comment Deadline: March 15, 2020

### ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.)

#### Addenda

BSR/ASHRAE/ICC/USGBC/IES Addendum ab to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

This independent substantive change to Addendum ab modifies 8.3.7 to expand view requirements and the list of spaces to which they apply.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum ap to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum ap to 189.1-2017 removes the portion of 5.3.6 that referred to 90.1 lighting requirements, which are already referenced in Section 7.4.6, then simplifies section numbering accordingly.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum aq to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum aq to 189.1-2017 revises the definition of native plants, as well as the requirements for maintaining native plants on-site. The proposal includes multiple options for meeting the new requirements, in order to provide flexibility for cases in which successful alternatives to native plants have been identified.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum at to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum at to 189.1-2017 consists of a structural change to Section 7 that separates interior and exterior lighting requirements and a technical change that requires subzone occupancy sensing control in large offices, based on C405.2.1.3 of the 2018 IECC.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum au to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum au to 189.1-2017 introduces a new threshold for pump efficiency as measured by the Pump Energy Index (PEI). These requirements meet the DOE standard for commercial and industrial pumps issued in January 2016 (effective January 2020) and already incorporated into ASHRAE 90.1.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum av to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum av to 189.1-2017 updates the Building Performance Factors (BPFs) listed in Table 7.5.1 based on an analysis performed by PNNL showing the energy savings incurred using 189.1-2017 versus 90.1-2016.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum aw to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum aw to 189.1-2017 deletes Section 9.3.3, which contains requirements that have been considered obsolete since the prohibition of ozone-depleting substances. This section is now reserved to be used in the future as the committee considers best practices for the use of refrigerants in green buildings.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum ax to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum ax to 189.1-2017 adds a reference to Standard 62.1 Section 7, Construction and System Start-up, which includes new indoor air quality requirements. It also deletes some requirements from Section 10 of Standard 189.1 that are covered by reference to Standard 62.1, which is intended to avoid duplication and confusion.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum az to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum az to 189.1-2017 removes the option to provide preferred parking for hybrid and low-emission vehicles as a means of meeting site vehicle provisions. As electric vehicles and charging stations become more prevalent, it is preferable to replace this option with additional requirements related to electric vehicle charging infrastructure.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum ba to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum ba to 189.1-2017 revises the thermostat section to include an option to use EnergyStar requirements.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum bb to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum bb to 189.1-2017 clarifies that minimum compliance with Standard 90.1-2019 is required without consideration of on-site or off-site renewable energy.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum be to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum be to 189.1-2017 updates the lighting quality section to include new requirements for dimming controls, color rendition, and flicker. It also clarifies the applicability of the requirements and adds relevant normative references.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum bh to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum bh to 189.1-2017 makes similar changes proposed in addendum ap (removes the portion of 5.3.6 referring to 90.1 lighting requirements, simplifies section numbering) and additionally, combines Tables 5.3.6.2A and B to provide a holistic view of Section 5.3.6 lighting requirements. This proposal also removes one of the existing options for upright compliance, maximum percent upright, which is no longer considered an industry-standard metric.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

## ASME (American Society of Mechanical Engineers)

### Revision

BSR/ASME RAM-1-202x, Reliability, Availability, and Maintainability of Equipment and Systems in Power Plants (revision of ANSI/ASME RAM-1-2013)

This Standard provides the requirements to establish a RAM program for any power-generation facility.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Justin Cassamassino, <http://cstools.asme.org/publicreview>

## BOMA (Building Owners and Managers Association)

### Revision

BSR/BOMA Z65.2-202x, For Industrial Buildings: Standard Methods of Measurement (revision of ANSI/BOMA Z65.2-2012)

The primary objectives of this standard are:

- To promote an unambiguous framework for determining the areas of Industrial Buildings with a strong focus on Rentable Area calculations;
- To facilitate transparency and clear communication of building measurement concepts among all participants in the commercial real estate industry;
- To allow a comparison of values on the basis of a clearly understood and generally agreed upon method of measurement; and
- To align concepts and measurement methodologies with the International Property Measurement Standards: Industrial Buildings (January 2018) document.

[Click here to view these changes in full](#)

Send comments (with optional copy to psa@ansi.org) to: tjohnston@boma.org

## NSF (NSF International)

### Revision

BSR/NSF 173-202x (i82r3), Dietary Supplements (revision of ANSI/NSF 173-2019)

The purpose of NSF/ANSI 173 is to serve as an evaluation tool for analyzing dietary supplements. Certification to this Standard serves as a communication tool between manufacturers of ingredients and finished product, retailers, healthcare practitioners, and consumers. This Standard provides test methods and evaluation criteria to allow for the determination that a dietary supplement contains the ingredients claimed on the label, either qualitatively or quantitatively, and that it does not contain specific undeclared contaminants. In some instances, validated laboratory methods are not yet available for analyzing certain ingredients. In such cases, new methods will be added to this Standard as they become available.

[Click here to view these changes in full](#)

Send comments (with optional copy to psa@ansi.org) to: rbrooker@nsf.org

BSR/NSF 350-202x (i45r2), Onsite Residential and Commercial Water Reuse Treatment Systems (revision of ANSI/NSF 350-202x (i45r1))

This Standard contains minimum requirements for onsite residential and commercial graywater treatment systems. Systems may include Graywater reuse treatment systems having a rated treatment capacity up to 5,678 L/d (1,500 gal/d); or Commercial graywater reuse treatment systems: This applies to onsite commercial reuse treatment systems that treat combined commercial facility graywater with capacities exceeding 5,678 L/d (1,500 gal/d) and commercial facility laundry water only of any capacity. Management methods and end uses appropriate for the treated effluent discharged from graywater residential and commercial treatment systems meeting this Standard are limited to subsurface discharge to the environment only.

[Click here to view these changes in full](#)

Send comments (with optional copy to psa@ansi.org) to: jsnider@nsf.org

## UL (Underwriters Laboratories, Inc.)

### New National Adoption

BSR/UL 60079-0-202x, Standard for Safety for Explosive Atmospheres - Part 0: General Requirements (national adoption of IEC 60079-0 with modifications and revision of ANSI/UL 60079-0-2019)

This proposal for UL 60079-0 covers: (1) Revisions for Alignment with 2020 NEC for Clause 1DV, Table 4ADV, and 29.4DV.

[Click here to view these changes in full](#)

Send comments (with optional copy to psa@ansi.org) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 80079-20-2-202x, Standard for Safety for Explosive Atmospheres - Part 20-2: Material Characteristics - Combustible Dusts Test Methods (national adoption with modifications of ISO/IEC 80079-20-2)

This proposal provides revisions to the proposal document dated December 6, 2019 for the Adoption of ISO/IEC 80079-20-2, Explosive Atmospheres - Part 20-2: Material Characteristics - Combustible Dusts Test Methods (first edition issued by ISO/IEC February 2016) as a new UL ISO/ IEC-based UL Standard, UL 80079-20-2 to the applicable requirements per comments received.

[Click here to view these changes in full](#)

Send comments (with optional copy to psa@ansi.org) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

## UL (Underwriters Laboratories, Inc.)

### ***New Standard***

BSR/UL 4600-202x, Standard for Safety for the Evaluation of Autonomous Products (new standard)

The following topic for the Standard for Safety for the Evaluation of Autonomous Products, UL 4600, is being recirculated: (1) Proposed First Edition of the Standard for Safety for the Evaluation of Autonomous Products, UL 4600

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

## UL (Underwriters Laboratories, Inc.)

### ***Revision***

BSR/UL 50-202x, Standard for Safety for Enclosures for Electrical Equipment, Non-Environmental Considerations (revision of ANSI/UL 50-2015)

Recirculation of the following topics: (2) Adhesives used to secure observation windows; (3) Add definitions of cabinet, cutout box, junction box, and pull box; (4) Restrictions on use of sheet metal screws; and (8) New Annex E for adhesives, enclosures, non-mechanical means of securement.

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 50E-202x, Standard for Safety for Enclosures for Electrical Equipment, Environmental Considerations (revision of ANSI/UL 50E-2015)

Recirculation of the following topics: (13) New Annex E for adhesives, enclosures, non-mechanical means of securement.

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 67-202x, Standard for Safety for Panelboards (revision of ANSI/UL 67-2019)

This proposal covers the following topics: (1) Addition of new requirements in Article 705 of the 2020 NEC to UL 67 and (2) Correction to Table 25.3.

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 414-202x, Standard for Safety for Meter Sockets (revision of ANSI/UL 414-2018)

This proposal for UL 414 covers the revision of requirements to include removable connector with integral mounting tang.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 493-202x, Standard for Safety for Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables (revision of ANSI/UL 493-2012 (R2016))

(1) Topic - Oven definition.

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 508A-202x, Standard for Safety for Industrial Control Panels (revision of ANSI/UL 508A-2018)

(2) SCCR for EMI filters in panels.

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 746A-202x, Standard for Safety for Polymeric Materials - Short Term Property Evaluations (revision of ANSI/UL 746A-2019)

This project covers a Ball Pressure Test (BPT) revision in UL 746A Polymer Variation Program (Table 9.2).

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 864-202x, Standard for Control Units and Accessories for Fire Alarm Systems (revision of ANSI/UL 864-2018)

The products covered by this standard are intended to be used in combination with other appliances and devices to form a commercial fire alarm system. These products provide all monitoring, control, and indicating functions of the system. An installation document(s) provided with the product describes the various products needed to form a fire alarm system and their intended use and installation. These requirements cover: (a) Discrete electrical control units and accessories for fire alarm systems; (b) Electrically and electronically operated amplifiers that provide speech communication and distinctive sounds in conjunction with fire-protective signaling systems; and (c) Commercial stationary and fixed power supplies for fire-protective signaling systems, having input and output ratings of not more than 600 V, direct- and alternating-current, (DC and AC).

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 1063-202x, Standard for Machine-Tool Wires and Cables (revision of ANSI/UL 1063-2018)

(1) Topic - Oven Definition.

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 1277-202x, Standard for Electrical Power and Control Tray Cables with Optional (revision of ANSI/UL 1277-2018)

(1) Topic - Oven Definition.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 1651-202x, Standard for Optical Fiber Cable (revision of ANSI/UL 1651-2018)

(1) Topic: Temperature Ratings.

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 1727-202x, Standard for Safety for Commercial Electric Personal Grooming Appliances (revision of ANSI/UL 1727-2012 (R2017))

This proposal for UL 1727 covers: (1) Power supply cord length for hand-supported grooming appliances; and (2) Withdrawal and replacement of 508C with UL 61800-5-1.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 4200A-202x, Standard for Safety for Products Incorporating Button or Coin Cell Batteries of Lithium Technologies (revision of ANSI/UL 4200A-2015)

This proposal for UL 4200A covers: (1) Update to construction requirements of battery compartments.

[Click here to view these changes in full](#)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 61730-1-202x, Standard for Safety for Photovoltaic (PV) module safety qualification - Part 1: Requirements For Construction (revision of ANSI/UL 61730-1-2017)

This proposal for UL 61730-1 covers: (1) Revision to a U.S. national difference to accept mounting and grounding means complying with the Standard for Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels, UL 2703 and (2) Revision to the static mechanical load requirements to clause 3, Terms and definitions, and clause 5, Markings.

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 61730-2-202x, Standard for Safety for Photovoltaic (PV) module safety qualification - Part 2: Requirements For Testing (revision of ANSI/UL 61730-2-2017)

This proposal for UL 61730-2 covers: (1) Revision to the Static Mechanical Load Test, MST 24, in clause 10.23; (2) Revisions to the Reverse Current Overload Test, MST 26, in section 10.20; and (3) Clarification of the Equipotential Bonding Test.

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

## Comment Deadline: March 30, 2020

### AAFS (American Academy of Forensic Sciences)

#### ***New Standard***

BSR/ASB Std 055-202x, Standard for Breath Alcohol Measuring Instrument Calibration (new standard)

This standard is applicable to the calibration of breath alcohol measuring instruments for evidentiary purposes. These minimum requirements are included for (1) the development and validation of calibration methods on these instruments; (2) evaluation of performance following adjustments and calibrations; and (3) monitoring the validity of the calibrations performed. This standard is not intended to cover preliminary (non-evidentiary) testing, ignition interlock, or federally regulated testing.

Single copy price: Free

Obtain an electronic copy from: Document and comments template can be viewed on the AAFS Standards Board website at: <http://www.asbstandardsboard.org/notice-of-standard-development-and-coordination/>

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [asb@aafs.org](mailto:asb@aafs.org)

### AGA (ASC Z380) (American Gas Association)

#### ***Addenda***

BSR GPTC Z380.1-2018 TR 2012-42-202x, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

Review Guide Material under 192.145 and address the issue of support for compression couplings and cast iron valves

Single copy price: Free

Obtain an electronic copy from: <https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/>

Order from: Betsy Tansey, (202) 824-7339, [btansey@aga.org](mailto:btansey@aga.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [GPTC@aga.org](mailto:GPTC@aga.org)

BSR GPTC Z380.1-2018 TR 2014-24-202x, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

Guide Material reviewed regarding ADB-2014-04, Flow Reversal on Transmission Lines. Material revised as appropriate.

Single copy price: Free

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BSR GPTC Z380.1-2018 TR 2014-28-202x, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

Review existing Guide Material (GM) 5.4 Procedure – Inside leak or odor complaint, and develop GM to address determining if there is an immediate threat to life and property, and actions to take in that situation.

Single copy price: Free

Obtain an electronic copy from: <https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/>

Order from: Betsy Tansey, (202) 824-7339, [btansey@aga.org](mailto:btansey@aga.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [GPTC@aga.org](mailto:GPTC@aga.org)

BSR GPTC Z380.1-2018 TR 2014-29-202x, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

Review existing (m) under Guide Material (GM) 5.4 Procedure - Inside leak or odor complaint and develop GM to minimize the likelihood that the service line will be punctured.

Single copy price: Free

Obtain an electronic copy from: <https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/>

Order from: Betsy Tansey, (202) 824-7339, [btansey@aga.org](mailto:btansey@aga.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [GPTC@aga.org](mailto:GPTC@aga.org)

BSR GPTC Z380.1-2018 TR 2016-18-202x, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

Review Guide Material 192.616 to determine if the information in 196.109 should be included to leak reporting in 2(iii).

Single copy price: Free

Obtain an electronic copy from: <https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/>

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [GPTC@aga.org](mailto:GPTC@aga.org)

BSR GPTC Z380.1-2018 TR 2016-22-202x, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

Provide additional support for deciding when it is necessary to purge short, smaller diameter piping (e.g., service lines less than 2 inches in diameter and less than 500 feet in length).

Single copy price: Free

Obtain an electronic copy from: <https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/>

Order from: Betsy Tansey, (202) 824-7339, [btansey@aga.org](mailto:btansey@aga.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [GPTC@aga.org](mailto:GPTC@aga.org)

BSR GPTC Z380.1-2018 TR 2017-02-202x, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

To revise GMA G-192-11 and G-192-11A to align appendices for all but technical differences due to difference in properties of the gas.

Single copy price: Free

Obtain an electronic copy from: <https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/>

Order from: Betsy Tansey, (202) 824-7339, [btansey@aga.org](mailto:btansey@aga.org)

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BSR GPTC Z380.1-2018 TR 2017-03-202x, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

Review the usage of the term “barhole” in the GMAs, as it is used for two different activities, investigating a leak and in pinpointing/repair of a leak. Develop definitions for barhole or barholing that can be used to identify which activity is being conducted.

Single copy price: Free

Obtain an electronic copy from: <https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/>

Order from: Betsy Tansey, (202) 824-7339, [btansey@aga.org](mailto:btansey@aga.org)

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BSR GPTC Z380.1-2018 TR 2017-05-202x, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

Review existing Guide Material, and revise as appropriate, in light of ADB-2016-06.

Single copy price: Free

Obtain an electronic copy from: <https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/>

Order from: Betsy Tansey, (202) 824-7339, [btansey@aga.org](mailto:btansey@aga.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [GPTC@aga.org](mailto:GPTC@aga.org)

BSR GPTC Z380.1-2018 TR 2017-12-202x, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

Review Amdt. 191-24 re Safety of Underground Natural Gas Storage and recommend revisions to Guide Material as appropriate.

Single copy price: Free

Obtain an electronic copy from: <https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/>

Order from: Betsy Tansey, (202) 824-7339, [btansey@aga.org](mailto:btansey@aga.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [GPTC@aga.org](mailto:GPTC@aga.org)

BSR GPTC Z380.1-2018 TR 2018-01-202X, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

Review existing Guide Material 8 Integrity Management Considerations and revise as appropriate to add examples

Single copy price: Free

Obtain an electronic copy from: <https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/>

Order from: Betsy Tansey, (202) 824-7339, [btansey@aga.org](mailto:btansey@aga.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [GPTC@aga.org](mailto:GPTC@aga.org)

BSR GPTC Z380.1-2018 TR 2018-24-202x, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

Review existing Guide Material and determine if changes are appropriate in light of National Transportation Safety Board Safety Recommendation Report "Installation of PermaLock Mechanical Tapping Tee Assemblies." {NTSB Report in TR Package - not copied here.}

Single copy price: Free

Obtain an electronic copy from: <https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/>

Order from: Betsy Tansey, (202) 824-7339, [btansey@aga.org](mailto:btansey@aga.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [GPTC@aga.org](mailto:GPTC@aga.org)

BSR GPTC Z380.1-2018 TR 2019-19-202x, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

To address a requirement in guide material by adding a reference to the federal code requirement.

Single copy price: Free

Obtain an electronic copy from: <https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/>

Order from: Betsy Tansey, (202) 824-7339, [btansey@aga.org](mailto:btansey@aga.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [GPTC@aga.org](mailto:GPTC@aga.org)

BSR GPTC Z380.1-2018 TR 2019-45-202x, Guide for Transmission, Distribution and Gathering Piping Systems (addenda to ANSI/GPTC Z380.1-2018, Addendum No. 5-2019)

Regarding 192.227, review existing Guide Material and revise as appropriate regarding Amendment 192-125.

Single copy price: Free

Obtain an electronic copy from: <https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/>

Order from: Betsy Tansey, (202) 824-7339, [btansey@aga.org](mailto:btansey@aga.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [GPTC@aga.org](mailto:GPTC@aga.org)

## **AGMA (American Gear Manufacturers Association)**

### **Revision**

BSR/AGMA 9009-EXX-202x, Flexible Couplings - Nomenclature for Flexible Couplings (revision and redesignation of ANSI/AGMA 9009-D02 (R2014))

This standard provides nomenclature common to flexible couplings and their application as used in mechanical power transmission drives.

Single copy price: \$52.00

Obtain an electronic copy from: [tech@agma.org](mailto:tech@agma.org)

Order from: [tech@agma.org](mailto:tech@agma.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [aboutaleb@agma.org](mailto:aboutaleb@agma.org)

## **ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.)**

### **Addenda**

BSR/ASHRAE/ICC/USGBC/IES Addendum aa to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/USGBC/IES Standard 189.1-2017)

This independent substantive change to Addendum aa modifies the definition of carbon dioxide equivalent (CO<sub>2</sub>e), deleting GWP values for methane and nitrous oxide which are no longer used. Various minor changes to clarify language are also suggested.

Single copy price: \$35.00

Obtain an electronic copy from: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

Order from: [standards.section@ashrae.org](mailto:standards.section@ashrae.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum ar to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum ar to 189.1-2017 adds new definitions related to enforcing the 189.1/IgCC in a manner consistent with the other I-Codes. The new definitions include "approved," "approved agency," "approved source," "listed," and "labeled." Consequently, phrases such as "approved by the AHJ" that appear throughout the text can be replaced with "approved."

Single copy price: \$35.00

Obtain an electronic copy from: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

Order from: [standards.section@ashrae.org](mailto:standards.section@ashrae.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum as to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum as to 189.1-2017 updates the Lighting Power Density (LPD) allowances so that values exceeding 91% of ASHRAE 90.1-2019 values (for most applications) will meet the IES-recommended illuminances, rather than exceeding them by 110%. Some exclusions were made when the adjusted value was not ideal for that application; these variations have been noted in the proposal.

Single copy price: \$35.00

Obtain an electronic copy from: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

Order from: [standards.section@ashrae.org](mailto:standards.section@ashrae.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum ay to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

Addendum ay to 189.1-2017 primarily consists of formatting changes that will simplify numbering and better organize requirements in Section 10.

Single copy price: \$35.00

Obtain an electronic copy from: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

Order from: [standards.section@ashrae.org](mailto:standards.section@ashrae.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum bd to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/USGBC/IES Standard 189.1-2017)

Addendum bd to 189.1-2017 updates normative references in Chapter 11 to their most recent, relevant versions.

Single copy price: \$35.00

Obtain an electronic copy from: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

Order from: [standards.section@ashrae.org](mailto:standards.section@ashrae.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE/ICC/USGBC/IES Addendum o to BSR/ASHRAE/ICC/USGBC/IES Standard 189.1-202x, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017)

This independent substantive change to Addendum o comes in response to the first public review that received objections regarding the designation of walkways, bicycle paths, and greenfield sites as jurisdictional options. These sections have been reinstated as core requirements that jurisdictions are not given the option to exclude.

Single copy price: \$35.00

Obtain an electronic copy from: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

Order from: [standards.section@ashrae.org](mailto:standards.section@ashrae.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

## **ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.)**

### ***Revision***

BSR/ASHRAE Standard 41.1-202x, Standard Methods for Temperature Measurement (revision of ANSI/ASHRAE Standard 41.1-2013)

This revision of ANSI/ASHRAE Standard 41.1-2013 prescribes methods for measuring temperature under laboratory and field conditions.

Single copy price: \$35.00

Obtain an electronic copy from: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

Order from: [standards.section@ashrae.org](mailto:standards.section@ashrae.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE Standard 41.10-202x, Standard Methods for Refrigerant Flow Measurement Using Flowmeters (revision of ANSI/ASHRAE Standard 41.10-2013)

This revision of ANSI/ASHRAE Standard 41.10-2013 prescribes methods for refrigerant mass flow rate measurement in laboratory and field applications using flowmeters.

Single copy price: \$35.00

Obtain an electronic copy from: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

Order from: [standards.section@ashrae.org](mailto:standards.section@ashrae.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

BSR/ASHRAE Standard 193-202x, Method of Test for Determining the Airtightness of HVAC Equipment (revision of ANSI/ASHRAE Standard 193-2010 (R2014))

This standard prescribes a method of test to determine the airtightness of forced-air HVAC equipment prior to field installation.

Single copy price: \$35.00

Obtain an electronic copy from: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

Order from: [standards.section@ashrae.org](mailto:standards.section@ashrae.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: <http://www.ashrae.org/standards-research--technology/public-review-drafts>

## ASNT (American Society for Nondestructive Testing)

### Revision

BSR/ASNT CP 189-202x, Qualification and Certification of Nondestructive Testing Personnel (revision, redesignation and consolidation of ANSI/ASNT CP-189-2016, ANSI/ASNT CP-189-2016, Addenda 2018)

This standard applies to personnel whose specific tasks or jobs require appropriate knowledge of the technical principles underlying nondestructive testing (NDT) methods for which they have responsibilities within the scope of their employment. These specific tasks or jobs include, but are not limited to, performing, specifying, reviewing, monitoring, supervising, and evaluating NDT work.

Single copy price: Free

Obtain an electronic copy from: [https://www.asnt.org/MajorSiteSections/Standards/ASNT\\_Standards/ANSI-ASNT\\_CP-189/2020\\_Public\\_Review](https://www.asnt.org/MajorSiteSections/Standards/ASNT_Standards/ANSI-ASNT_CP-189/2020_Public_Review)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [bfrye@asnt.org](mailto:bfrye@asnt.org)

## AWS (American Welding Society)

### Revision

BSR/AWS D17.3/D17.3M-202x, Specification for Friction Stir Welding of Aluminum Alloys for Aerospace Applications (revision of ANSI/AWS D17.3/D17.3M-2016)

This specification covers the general requirements for the friction stir welding of aluminum alloys for aerospace applications. It includes the requirements for weldment design, qualification of personnel and procedures, fabrication, and inspection.

Single copy price: \$38.00

Obtain an electronic copy from: [mdiaz@aws.org](mailto:mdiaz@aws.org)

Order from: Mario Diaz, (305) 443-9353, [mdiaz@aws.org](mailto:mdiaz@aws.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Same

## AWWA (American Water Works Association)

### Revision

BSR/AWWA C950-202x, Fiberglass Pressure Pipe (revision of ANSI/AWWA C950-2013)

This standard describes the fabrication and the testing of nominal 1-in. through 156-in. (25-mm through 4,000-mm) fiberglass pipe and joining systems for use in both above-ground and below-ground water systems. Service and distribution piping systems and transmission piping systems are included.

Single copy price: Free

Obtain an electronic copy from: [polson@awwa.org](mailto:polson@awwa.org)

Order from: Paul Olson, (303) 347-6178, [polson@awwa.org](mailto:polson@awwa.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Same

## BIFMA (Business and Institutional Furniture Manufacturers Association)

### Reaffirmation

BSR/BIFMA X5.11-2015 (R202x), General-Purpose Large Occupant Office Chairs (reaffirmation of ANSI/BIFMA X5.11-2015)

This standard is intended to provide manufacturers, specifiers, and users with a common basis for evaluating the safety, durability, and structural adequacy of office chairs for large occupants.

Single copy price: \$150.00

Obtain an electronic copy from: [dpanning@bifma.org](mailto:dpanning@bifma.org)

Order from: David Panning, (616) 591-9798, [dpanning@bifma.org](mailto:dpanning@bifma.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Same

## **BIFMA (Business and Institutional Furniture Manufacturers Association)**

### ***Revision***

BSR/BIFMA X5.4-202X, Public and Lounge Seating (revision of ANSI/BIFMA X5.4-2012)

This standard is intended to provide manufacturers, specifiers, and users with a common basis for evaluating the safety, durability, and structural adequacy of business and institutional public and lounge seating.

Single copy price: \$150.00

Obtain an electronic copy from: [dpanning@bifma.org](mailto:dpanning@bifma.org)

Order from: David Panning, (616) 591-9798, [dpanning@bifma.org](mailto:dpanning@bifma.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Same

## **CSA (CSA America Standards Inc.)**

### ***Reaffirmation***

BSR Z21.12-1990 (R202x), Draft Hoods (reaffirmation and redesignation of ANSI Z21.12-1990 (R2015), Z21.12a-1993 (R2105), Z21.12b-1994 (R2015))

Details test and examination criteria for replacement draft hoods for use on installed appliances using natural, manufactured, and mixed gases; liquefied petroleum gases and LP gas-air mixtures; and for use on appliances that have been converted from other fuels to the above gases. They are suitable for use with gas appliances required to be installed with a draft hood as specified in the National Fuel Gas Code, ANSI Z223.1, in the event the appliance designs do not incorporate draft hoods.

Single copy price: Free

Obtain an electronic copy from: [ansi.contact@csagroup.org](mailto:ansi.contact@csagroup.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [david.zimmerman@csagroup.org](mailto:david.zimmerman@csagroup.org)

BSR Z21.66-2015 (R202x), Automatic damper devices for use with gas-fired appliances (same as CSA 6.14) (reaffirmation of ANSI Z21.66-2015)

Details test and examination criteria for electrically operated and thermally actuated automatic vent damper devices which are capable of being installed in venting systems, in the outlets of or downstream of appliance draft hoods, of existing individual, automatically operated listed gas-fired appliances. An electrically operated vent damper device employs electrical energy to control the device. A thermally actuated vent damper device depends for operation exclusively upon the direction conversion of the thermal energy of the vent gases into mechanical energy.

Single copy price: Free

Obtain an electronic copy from: [ansi.contact@csagroup.org](mailto:ansi.contact@csagroup.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [david.zimmerman@csagroup.org](mailto:david.zimmerman@csagroup.org)

## **ESTA (Entertainment Services and Technology Association)**

### ***New Standard***

BSR E1.4-2-202x, Entertainment Technology - Statically Suspended Rigging Systems (new standard)

BSR E1.4-2 addresses statically suspended rigging systems permanently installed in performances spaces, places of assembly, and other areas used for entertainment purposes where not covered by other American National Standards on Entertainment Technology. This standard intends to establish minimum performance criteria, recommendations, and guidelines that can be used for installation, use, maintenance, and inspection purposes. This standard is intended to establish minimum requirements for statically suspended rigging systems to safeguard health, safety, and general welfare.

Single copy price: Free

Obtain an electronic copy from: [http://tsp.esta.org/tsp/documents/public\\_review\\_docs.php](http://tsp.esta.org/tsp/documents/public_review_docs.php)

Order from: Richard Nix, (212) 244-1505, [standards@esta.org](mailto:standards@esta.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: [standards@esta.org](mailto:standards@esta.org)

## **IAPMO (ASSE Chapter) (ASSE International Chapter of IAPMO)**

### ***New Standard***

BSR/ASSE 12080-202x, Professional Qualification Standard for Legionella Water Safety and Management Personnel (new standard)

This standard outlines the minimum qualifications needed, including the knowledge and competency to become a member of a water safety team involved in the development of a risk assessment analysis and a water management and sampling plan for protection from Legionella and other waterborne pathogens. The objective is to establish standard training, education, and certification requirements for the members of building water management teams and other interested parties to control building water systems and its devices to reduce the risk and spread of Legionella.

Single copy price: Free

Obtain an electronic copy from: [marianne.waickman@asse-plumbing.org](mailto:marianne.waickman@asse-plumbing.org)

Order from: Marianne Waickman, (708) 995-3015, [marianne.waickman@asse-plumbing.org](mailto:marianne.waickman@asse-plumbing.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Same

## **NEMA (ASC C136) (National Electrical Manufacturers Association)**

### ***Revision***

BSR C136.15-202X, Luminaire Field Identification (revision of ANSI C136.15-2015)

The intent of this standard is to provide a simple, uniform method for identifying the type and wattage rating of a luminaire used for roadway and area lighting.

Single copy price: \$48.00

Obtain an electronic copy from: [David.Richmond@nema.org](mailto:David.Richmond@nema.org)

Order from: David Richmond, (703) 841-3234, [David.Richmond@nema.org](mailto:David.Richmond@nema.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Same

## **NEMA (ASC C81) (National Electrical Manufacturers Association)**

### ***Stabilized Maintenance***

BSR C81.64-2005 (S202x), Guidelines and General Information for Electric Lamp Bases, Lampholders and Gauges (stabilized maintenance of ANSI C81.64-2005 (R2014))

This American National Standard gives guidance and information to designers and testing personnel on the use of ANSI/IEC C81.61, ANSI/IEC C81.62, and ANSI/IEC C81.63 and their supplements. It includes the designation system and general information regarding bases (caps), lampholders, and gauges. Many parts of this standard reference the adopted parts of IEC 60061-4, Lamp Caps and Holders Together with Gauges for Control of Interchangeability and Safety -Part 4: Guidelines and General Information. This standard is intended for use by standards engineers. In those cases where new proposals have to be prepared, so as to achieve uniformity in base/lampholder/gauge standards and testing procedures. It contains information from ANSI and the IEC in regard to bases (caps) and holders in general use today, together with their relevant gauges. The gauges illustrated, although generally accepted in principle, are not necessarily the only form in which they can be made. This standard is applicable to bases, lampholders, and gauges with the object of securing international interchangeability and safety.

Single copy price: \$107.00

Obtain an electronic copy from: [michael.erbesfeld@nema.org](mailto:michael.erbesfeld@nema.org)

Order from: Michael Erbesfeld, (703) 841-3262, [Michael.Erbesfeld@nema.org](mailto:Michael.Erbesfeld@nema.org)

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Same

## UL (Underwriters Laboratories, Inc.)

### ***New National Adoption***

BSR/UL 60947-5-2-202x, Standard for Safety for Low-Voltage Switchgear and Controlgear - Part 5-2: Control Circuit Devices and Switching Elements - Proximity Switches (national adoption with modifications of IEC 60947-5-2)

This proposal provides revisions to UL 60947-5-2, the Standard for Low-voltage Switchgear and Controlgear - Part 5.2: Control Circuit Devices and Switching Elements - Proximity Switches (Edition 2.2 dated March 28, 2014), to harmonize with IEC 60947-5-2, the Standard for Low-voltage Switchgear and Controlgear - Part 5.2: Control Circuit Devices and Switching Elements, Edition 3.1. These revisions include: (1) Update to the existing IEC 60947-5-2 text; (2) Removal of existing US National Differences to promote further harmonization with IEC 60947-5-2; (3) Inclusion of additional requirements from existing UL standards as new National Differences to ensure consistent application of requirements across related UL standards; and (4) Segregation of all US National Differences to new Annex DVA, with further definition of those US National Differences that are considered "Normative" and those that are considered "Informative".

Single copy price: Contact comm2000 for pricing and delivery options

Obtain an electronic copy from: <https://csds.ul.com/Home/ProposalsDefault.aspx>

Order from: <http://www.shopulstandards.com>

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

## UL (Underwriters Laboratories, Inc.)

### ***Reaffirmation***

BSR/UL 248-9-2005 (R202x), Standard for Low-Voltage Fuses - Part 9: Class K Fuses (reaffirmation of ANSI/UL 248-9-2005 (R2015))

Reaffirmation and continuance of the Second Edition of the Standard for Low-Voltage Fuses - Part 9: Class K Fuses, UL 248-9, as an American National Standard.

Single copy price: Free

Obtain an electronic copy from: <https://csds.ul.com/Home/ProposalsDefault.aspx>

Order from: <http://www.shopulstandards.com>

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 248-14-2005 (R202x), Standard for Safety for Low-Voltage Fuses - Part 14: Supplemental Fuses (reaffirmation of ANSI/UL 248-14-2005 (R2015))

Reaffirmation and continuance of the Second Edition of the Standard for Low-Voltage Fuses - Part 14: Supplemental Fuses, UL 248-14, as an American National Standard.

Single copy price: Free

Obtain an electronic copy from: <https://csds.ul.com/Home/ProposalsDefault.aspx>

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## UL (Underwriters Laboratories, Inc.)

### ***Revision***

BSR/UL 82-202x, Standard for Safety for Electric Gardening Appliances (revision of ANSI/UL 82-2018)

Proposed revision to UL 82, Standard for Safety for Electric Gardening Appliances, to add references to UL 61800-5-1, Standard for Adjustable Speed Electric Power Drive Systems, to replace all references to UL 508C, Standard for Safety for Power Conversion Equipment.

Single copy price: Free

Obtain an electronic copy from: <https://csds.ul.com/Home/ProposalsDefault.aspx>

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 987-202x, Standard for Safety for Stationary and Fixed Electric Tools (revision of ANSI/UL 987-2010)

This proposal for UL 987 covers: (1) Proposed revision to add references to UL 61800-5-1, Standard for Adjustable Speed Electric Power Drive Systems, to replace all references to UL 508C, Standard for Safety for Power Conversion Equipment.

Single copy price: Free

Obtain an electronic copy from: <https://csds.ul.com/Home/ProposalsDefault.aspx>

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 1090-202x, Standard for Safety for Electric Snow Movers (revision of ANSI/UL 1090-2012)

This proposal for UL 1090 covers: (1) Proposed revision to add references to UL 61800-5-1, Standard for Adjustable Speed Electric Power Drive Systems, to replace all references to UL 508C, Standard for Safety for Power Conversion Equipment.

Single copy price: Free

Obtain an electronic copy from: <https://csds.ul.com/Home/ProposalsDefault.aspx>

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 1425-202x, Standard for Cables for Non-Power-Limited Fire-Alarm Circuits (revision of ANSI/UL 1425-2010 (R2015))

Reaffirmation and continuance of the third edition of the Standard for Cables for Non-Power-Limited Fire-Alarm Circuits, UL 1425, as an American National Standard.

Single copy price: Free

Obtain an electronic copy from: <https://csds.ul.com/Home/ProposalsDefault.aspx>

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

BSR/UL 1447-202x, Standard for Safety for Electric Lawn Mowers (revision of ANSI/UL 1447-2017)

This proposal for UL 1447 covers: (1) Proposed revision to add references to UL 61800-5-1, Standard for Adjustable Speed Electric Power Drive Systems, to replace all references to UL 508C, Standard for Safety for Power Conversion Equipment.

Single copy price: Free

Obtain an electronic copy from: <https://csds.ul.com/Home/ProposalsDefault.aspx>

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

## Comment Deadline: April 14, 2020

Reaffirmations and withdrawals available electronically may be accessed at: [webstore.ansi.org](http://webstore.ansi.org)

### ASME (American Society of Mechanical Engineers)

#### *Reaffirmation*

BSR/ASME PTC 12.2-2010 (R202x), Steam Surface Condensers (reaffirmation of ANSI/ASME PTC 12.2-2010 (R2015))

This Code provides standard directions and rules for conducting and reporting performance tests of water-cooled, steam surface condensers, referred to as condensers in this standard.

Single copy price: \$175.00

Obtain an electronic copy from: <http://cstools.asme.org/publicreview>

Order from: <https://www.asme.org/shop/standards>

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Angel Guzman, <http://cstools.asme.org/publicreview>



BSR/ASME PTC 19.2-2010 (R202x), Pressure Measurement (reaffirmation of ANSI/ASME PTC 19.2-2010 (R2015))

This standard gives instructions and guidance for the accurate determination of pressure values in support of the ASME Performance Test Codes.

Single copy price: \$107.00

Obtain an electronic copy from: <http://cstools.asme.org/publicreview>

Order from: <https://www.asme.org/shop/standards>

Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Angel L. Guzman Rodriguez, <http://cstools.asme.org/publicreview>

## **UL (Underwriters Laboratories, Inc.)**

### ***New Standard***

BSR/UL 244B-202X, Field Installed and/or Field Connected Appliance Controls (new standard)

These requirements cover electrical controls that are complete in construction and designed specifically for installation in North America. These products are intended to be installed within the guidelines and requirements of the National Electrical Code, NFPA 70, and other relevant building codes. Examples are cord-connected controls with standard NEMA plugs and receptacles, direct plug-in controls and controls intended to be mounted in wiring boxes. This standard applies to sensing controls for non-industrial use. These controls may be remotely actuated and respond to motion, light, sound, infrared input signals (passive and active type), power line carrier signals, radio frequency input signals and similar stimuli. In combination with one or more of the aforementioned stimuli, these controls may also be time responsive. Single stimuli sensing controls (for instance, photoelectric switches) are covered under the scope of UL 773A, the Standard for Photoelectric Switches. Multi-functional controls are covered under the scope of this standard provided that the product's primary function is not covered under another standard of safety.

Single copy price: Free

Obtain an electronic copy from: <https://csds.ul.com/Home/ProposalsDefault.aspx>

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Send comments (with optional copy to [psa@ansi.org](mailto:psa@ansi.org)) to: Follow the instructions in the following website to enter comments into the CSDS Work Area: <https://csds.ul.com/Home/ProposalsDefault.aspx>

## **Notice of Withdrawn ANS by an ANSI-Accredited Standards Developer**

In accordance with clause 4.2.1.3.2 Withdrawal by ANSI-Accredited Standards Developer of the ANSI Essential Requirements, the following American National Standards have been withdrawn as an ANS.

### **NEMA (ASC C8) (National Electrical Manufacturers Association)**

ANSI ICEA S-101-699-2011, Category 3 Individually Unshielded Twisted Pair Indoor Cable for Use in General Purpose Non-LAN Telecommunications Wiring Systems Technical Requirements

Questions may be directed to: Khaled Masri, (703) 841-3278, [Khaled.Masri@nema.org](mailto:Khaled.Masri@nema.org)

ANSI/ICEA S-98-688-2012, ICEA Standard for Broadband TP Aircore, PE, CU

Questions may be directed to: Khaled Masri, (703) 841-3278, [Khaled.Masri@nema.org](mailto:Khaled.Masri@nema.org)

## **Correction**

### **Error in Designation**

#### **BSR/NSF 245-202x**

There was a typo in the Designation for BSR/NSF 245-202x in the Call for Comment notice and in the header of the PDF file attachment included in the January 31, 2020 Standards Action. The ballot cited should have referenced BSR/NSF 245-202x (i18r1), not (i158r1).

# Call for Members (ANS Consensus Bodies)

Directly and materially affected parties who are interested in participating as a member of an ANS consensus body for the standards listed below are requested to contact the sponsoring standards developer directly and in a timely manner.

---

## AGMA (American Gear Manufacturers Association)

**Contact:** Amir Aboutaleb  
**Phone:** (703) 684-0211  
**E-mail:** tech@agma.org  
**Office:** 1001 N Fairfax Street  
 5th Floor  
 Alexandria, VA 22314-1587

BSR/AGMA 9009-EXX-202x, Flexible Couplings - Nomenclature for Flexible Couplings (revision and redesignation of ANSI/AGMA 9009-D02 (R2014))

## AIAA (American Institute of Aeronautics and Astronautics)

**Contact:** Hillary Woehrl  
**Phone:** (703) 264-7546  
**E-mail:** hillaryw@aiaa.org  
**Office:** 12700 Sunrise Valley Drive, Suite 200  
 Reston, VA 20191-5807

BSR/AIAA S-153-202x, Human Spaceflight: Spacecraft Architecture and Systems Engineering Ontology (new standard)

## ASNT (American Society for Nondestructive Testing)

**Contact:** Brian Frye  
**Phone:** (614) 384-2468  
**E-mail:** bfrye@asnt.org  
**Office:** 1711 Arlingate Lane  
 Columbus, OH 43228

BSR/ASNT CP 189-202x, For Qualification and Certification of Nondestructive Testing Personnel (revision, redesignation and consolidation of ANSI/ASNT CP-189-2016, ANSI/ASNT CP-189-2016, Addenda 2018)

## B11 (B11 Standards, Inc.)

**Contact:** Chris Felinski  
**Phone:** (832) 446-6999  
**E-mail:** cfelinski@b11standards.org  
**Office:** P.O. Box 690905  
 Houston, TX 77269

BSR/B11.25-202x, Safety Requirements for Large Machines (revision of ANSI B11.25-2015)

## ITI (INCITS) (InterNational Committee for Information Technology Standards)

**Contact:** Deborah Spittle  
**Phone:** (202) 737-8888  
**E-mail:** comments@standards.incits.org  
**Office:** 700 K Street NW  
 Suite 600  
 Washington, DC 20001

INCITS 322-202x, Information Technology - Card Durability Test Methods (revision of INCITS 322-2015)

INCITS 440-201x, Information Technology - Card Durability / Service Life (revision of INCITS 440-2015)

## NEMA (ASC C136) (National Electrical Manufacturers Association)

**Contact:** David Richmond  
**Phone:** (703) 841-3234  
**E-mail:** David.Richmond@nema.org  
**Office:** 1300 North 17th Street  
 Suite 900  
 Rosslyn, VA 22209

BSR C136.15-202X, Luminaire Field Identification (revision of ANSI C136.15-2015)

## NSF (NSF International)

**Contact:** Jason Snider  
**Phone:** (734) 418-6660  
**E-mail:** jsnider@nsf.org  
**Office:** 789 N. Dixboro Road  
 Ann Arbor, MI 48105-9723

BSR/NSF 350-202x (i45r2), Onsite Residential and Commercial Water Reuse Treatment Systems (revision of ANSI/NSF 350-202x (i45r1))

**Contact:** Rachel Brooker  
**Phone:** (734) 827-6866  
**E-mail:** rbrooker@nsf.org  
**Office:** 789 N. Dixboro Road  
 Ann Arbor, MI 48105-9723

BSR/NSF 173-202x (i82r3), Dietary Supplements (revision of ANSI/NSF 173-2019)

## **Call for Members (ANS Consensus Bodies)**

### **Call for Committee Members**

#### **ASC O1 – Safety Requirements for Woodworking Machinery**

Are you interested in contributing to the development and maintenance of valuable industry safety standards? The ASC O1 is currently looking for members in the following categories:

- General Interest
- Government
- Producer
- User

If you are interested in joining the ASC O1, contact WMMA Associate Director Jennifer Miller at [jennifer@wmma.org](mailto:jennifer@wmma.org).

# Final Actions on American National Standards

The standards actions listed below have been approved by the ANSI Board of Standards Review (BSR) or by an ANSI-Audited Designator, as applicable.

---

## AARST (American Association of Radon Scientists and Technologists)

### *New Standard*

ANSI/AARST RRNC-2020, Rough-in of Radon Control Components in New Construction of 1 & 2 Family Dwellings and Townhouses. (new standard): 2/7/2020

### *Revision*

ANSI/AARST CCAH-2020, Reducing Radon in New Construction of One & Two Family Dwellings and Townhouses (revision of ANSI/AARST CCAH-2013): 2/7/2020

## ACI (American Concrete Institute)

### *New Standard*

ANSI/ACI 562-2020, Code Requirements for Evaluation, Repair, and Rehabilitation of Concrete Buildings (ACI 562-XX) and Commentary (new standard): 2/10/2020

## AGMA (American Gear Manufacturers Association)

### *Reaffirmation*

ANSI/AGMA 1003-2007 (R2020), Tooth Proportions for Fine-Pitch Spur and Helical Gearing (reaffirmation of ANSI/AGMA 1003-2007 (R2014)): 2/6/2020

ANSI/AGMA 1010-2014 (R2020), Appearance of Gear Teeth - Terminology of Wear and Failure (reaffirmation of ANSI/AGMA 1010-2014): 2/6/2020

ANSI/AGMA 1103-2007 (R2020), Tooth Proportions for Fine-Pitch Spur and Helical Gearing - Metric Edition (reaffirmation of ANSI/AGMA 1103-2007 (R2014)): 2/6/2020

ANSI/AGMA 2004-2008 (R2020), Gear Materials, Heat Treatment and Processing Manual (reaffirmation of ANSI/AGMA 2004-2008 (R2014)): 2/6/2020

ANSI/AGMA 6033-C08 (R2020), Materials for Marine Propulsion Gearing (reaffirmation of ANSI/AGMA 6033-2008 (R2014)): 2/7/2020

ANSI/AGMA 6133-C08 (R2020), Materials for Marine Propulsion Gearing - Metric Edition (reaffirmation of ANSI/AGMA 6133-2008 (R2014)): 2/7/2020

### *Revision*

ANSI/AGMA 6002-DXX-2020, Design Guide for Vehicle Spur and Helical Gears (revision of ANSI/AGMA 6002-C2015): 2/6/2020

ANSI/AGMA 6102-DXX-2020, Design Guide for Vehicle Spur and Helical Gears (Metric Edition) (revision of ANSI/AGMA 6102-C2015): 2/6/2020

## ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.)

### *Reaffirmation*

ANSI/ASHRAE Standard 26-2010 (R2020), Mechanical Refrigeration and Air Conditioning Installations Aboard Ship (reaffirmation of ANSI/ASHRAE Standard 26-2010): 2/10/2020

ANSI/ASHRAE Standard 28-1996 (R2020), Method of Testing Flow Capacity of Refrigerant Capillary Tubes (reaffirmation of ANSI/ASHRAE Standard 28-1996 (R2010)): 2/10/2020

### *Withdrawal*

ANSI/ASHRAE Standard 94.2-2010, Method of Testing Thermal Storage Devices with Electrical Input and Thermal Output Based on Thermal Performance (withdrawal of ANSI/ASHRAE Standard 94.2-2010): 2/10/2020

## AWWA (American Water Works Association)

### *Revision*

ANSI/AWWA A100-2020, Water Wells (revision of ANSI/AWWA A100-2015): 2/6/2020

ANSI/AWWA C225-2020, Fused Polyolefin Coatings for Steel Water Pipe (revision of ANSI/AWWA C225-2013): 2/6/2020

## CTA (Consumer Technology Association)

### *New Standard*

- \* ANSI/CTA 709.8-2020, Open Data Communication in Building Automation, Controls and Building Management - Control Network Protocol Specification - Part 8: Control Network Protocol/High Definition Power Line Channel Specification (CNP/HD-PLC) (new standard): 2/6/2020
- \* ANSI/CTA 709.9-2020, Open Data Communication in Building Automation, Controls and Building Management - Control Network Protocol Specification - Part 9: Control Network Protocol/Wireless Communication in ISM Bands (LON-ISM-RF) (new standard): 2/6/2020

## IAPMO (ASSE Chapter) (ASSE International Chapter of IAPMO)

### *New Standard*

ANSI/ASSE 1014-2020, Performance Requirements for Backflow Prevention Devices for Hand-Held Showers (new standard): 2/7/2020

ANSI/ASSE 1020-2020, Performance Requirements for Pressure Vacuum Breaker Assembly (new standard): 2/7/2020

ANSI/ASSE 1069-2020, Performance Requirements for Automatic Temperature Control Mixing Valves (new standard): 2/7/2020

## IES (Illuminating Engineering Society)

### ***New Standard***

ANSI/IES LP-1-2020, IES Lighting Practice: Designing Quality Lighting for People and Buildings (new standard): 2/7/2020

ANSI/IES LP-2-2020, Lighting Practice: Designing Quality Lighting for People in Outdoor Environments (new standard): 2/7/2020

ANSI/IES LS-2-2020, Lighting Science: Concepts and Language of Lighting (new standard): 2/7/2020

ANSI/IES LP-4-2020, Lighting Practice: Electric Light Sources - Properties, Selection and Specification (new standard): 2/7/2020

ANSI/IES LS-7-2020, Lighting Science: Vision - Eye and Brain (new standard): 2/7/2020

ANSI/IES LM-9-2020, Approved Method: Electrical and Photometric Measurement of Fluorescent Lamps (new standard): 2/7/2020

ANSI/IES LP-9-2020, Lighting Practice: Upgrading Lighting Systems in Commercial and Institutional Facilities (new standard): 2/7/2020

ANSI/IES LM-10-2020, Approved Method: Photometric Testing of Roadway and Area Lighting Fluorescent Luminaires (new standard): 2/7/2020

ANSI/IES LP-10-2020, Lighting Practice: Sustainable Lighting - An Introduction to the Environmental Impacts of Lighting (new standard): 2/7/2020

ANSI/IES LM-11-2020, Approved Method: Guide for Photometric Testing of Searchlights (new standard): 2/7/2020

ANSI/IES LM-20-2020, Approved Method: Photometry of Reflector Type Lamps (new standard): 2/7/2020

ANSI/IES LM-28-2020, Approved Method: Guide for the Selection, Care and Use of Electrical Instruments in the Photometric Laboratory (new standard): 2/7/2020

ANSI/IES LM-31-2020, Approved Method: Photometric Testing of Roadway and Area Lighting Luminaires Using Incandescent Filament or High Intensity Discharge Lamps (new standard): 2/7/2020

ANSI/IES LM-35-2020, Approved Method: Photometric Testing of Floodlights Using High Intensity Discharge or Incandescent Filament Lamps (new standard): 2/7/2020

ANSI/IES LM-37-2020, Approved Method: IES Guide for Determination of Average Luminance (Calculated) for Indoor Luminaires (new standard): 2/7/2020

ANSI/IES LM-40-2020, IES Approved Method: Life Testing of Fluorescent Lamps (new standard): 2/7/2020

ANSI/IES LM-45-2020, Approved Method: Electrical and Photometric Measurement of General Service Incandescent Filament Lamps (new standard): 2/7/2020

ANSI/IES LM-46-2020, Approved Method: Photometric Testing of Indoor Luminaires Using High Intensity Discharge or Incandescent Filament Lamps. (new standard): 2/7/2020

ANSI/IES LM-47-2020, Approved Method: Life Testing of High Intensity Discharge (HID) Lamps (new standard): 2/7/2020

ANSI/IES LM-49-2020, Approved Method: Life Testing of Incandescent Filament Lamps (new standard): 2/7/2020

ANSI/IES LM-51-2020, Approved Method: Electrical and Photometric Measurement of High Intensity Discharge Lamps (new standard): 2/7/2020

ANSI/IES LM-54-2020, Approved Method: IES Guide to Lamp Seasoning (new standard): 2/7/2020

ANSI/IES LM-58-2020, Approved Method: Spectroradiometric Measurement Methods for Light Sources (new standard): 2/7/2020

ANSI/IES LM-62-2020, Approved Method: Guide for Laboratory or Field Measurements of Fluorescent Lamps and Ballasts in Luminaires (new standard): 2/7/2020

ANSI/IES LM-65-2020, Approved Method: Life Testing of Single-Based Fluorescent Lamps (new standard): 2/7/2020

ANSI/IES LM-77-2020, Approved Method: Intensity Distribution Measurement of Luminaires and Lamps using Digital Screen Imaging Photometry (new standard): 2/7/2020

ANSI/IES LM-78-2020, Approved Method: Total Luminous Flux Measurement of Lamps using an Integrating Sphere Photometer (new standard): 2/7/2020

ANSI/IES LM-81-2020, Approved Method: Photometric Testing of Skylights and Tubular Daylighting Devices under Hemispherical Sky Conditions (new standard): 2/7/2020

ANSI/IES LM-82-2020, IES Approved Method for the Characterization of Optical and Electrical Properties of Solid-State Lighting Products as a Function of Temperature (new standard): 2/7/2020

ANSI/IES LM-85-2020, Approved Method: Optical and Electrical Measurements of LED Packages and LED Arrays (new standard): 2/7/2020

ANSI/IES LM-86-2020, Approved Method: Measuring Luminous Flux and Color Maintenance of Remote Phosphor Components (new standard): 2/7/2020

ANSI/IES RP-6-2020, Recommended Practice: Lighting Sports and Recreational Areas (new standard): 2/7/2020

ANSI/IES RP-37-2020, Recommended Practice: Lighting Airport Outdoor Environments (new standard): 2/7/2020

ANSI/IES TM-25-2020, Ray File Format for the Description of the Emission Property of Light Sources (new standard): 2/7/2020

ANSI/IES TM-27-2020, Technical Memorandum: IES Standard Format for the Electronic Transfer of Spectral Data (new standard): 2/7/2020

ANSI/IES/NALMCO RP-36-2020, Recommended Practice: Lighting Maintenance (new standard): 2/7/2020

### ***Reaffirmation***

ANSI/IES LM-80-2017 (R2020), Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules (reaffirmation of ANSI/IES LM-80-15 Errata-2017): 2/7/2020

### ***Revision***

ANSI/IES RP-1-2020, Recommended Practice: Lighting Office Spaces (revision of ANSI/IES RP-1-2013): 2/7/2020

ANSI/IES RP-28-2020, Recommended Practice: Lighting and the Visual Environment for Older Adults and the Visually Impaired (revision of ANSI/IES RP-28-2016): 2/7/2020

## **NEMA (ASC C8) (National Electrical Manufacturers Association)**

### ***Revision***

- \* ANSI/NEMA WC 53/ICEA T-27-581-2020, Standard Test Methods for Extruded Dielectric Power, Control, Instrumentation, and Portable Cables for Test (revision and redesignation of ANSI/ICEA T-27-581-2016): 2/7/2020

## **NSF (NSF International)**

### ***Revision***

ANSI/NSF 24-2020 (i11r1), Plumbing System Components for Recreational Vehicles (revision of ANSI/NSF 24-2016): 2/6/2020

ANSI/NSF 173-2020 (i89r1), Dietary Supplements (revision of ANSI/NSF 173-2019): 2/5/2020

## **UL (Underwriters Laboratories, Inc.)**

### ***New Standard***

ANSI/UL 970-2020, Standard for Safety for Retail Fixtures and Merchandise Displays (new standard): 2/7/2020

### ***Revision***

ANSI/UL 2225-2020, Standard for Safety for Cables and Cable-Fittings for Use in Hazardous (Classified) Locations (revision of ANSI/UL 2225-2019): 2/6/2020

# Project Initiation Notification System (PINS)

ANSI Procedures require notification of ANSI by ANSI-accredited standards developers (ASD) of the initiation and scope of activities expected to result in new or revised American National Standards (ANS). Early notification of activity intended to reaffirm or withdraw an ANS and in some instances a PINS related to a national adoption is optional. The mechanism by which such notification is given is referred to as the PINS process. For additional information, see clause 2.4 of the ANSI Essential Requirements: Due Process Requirements for American National Standards.

Following is a list of proposed actions and new ANS that have been received recently from ASDs. Please also review the section in Standards Action entitled "American National Standards Maintained Under Continuous Maintenance" for additional or comparable information with regard to standards maintained under the continuous maintenance option. Use the following Public Document Library url to access PDF & EXCEL reports of approved & proposed ANS: [List of Approved and Proposed ANS](#)

Directly and materially affected interests wishing to receive more information or to submit comments are requested to contact the standards developer directly within 30 days of the publication of this announcement.

## AIAA (American Institute of Aeronautics and Astronautics)

Contact: Hillary Woehrle, (703) 264-7546, [hillaryw@aiaa.org](mailto:hillaryw@aiaa.org)  
12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807

### New Standard

BSR/AIAA S-153-202x, Human Spaceflight: Spacecraft Architecture and Systems Engineering Ontology (new standard)

Stakeholders: HSF systems (vessel, subsystem, mission planning or ground supporting system planning) designers, engineers, system architects, managers, researchers, educators.

Project Need: This standard defines currently non-existing ontology of HSF vessels and their architectures including subsystems and human safety requirements and hence organizes currently chaotic environment of the complex interdisciplinary domain of human space flight systems.

This is the first level of a three-level standard defining a human spaceflight (HSF) spacecraft ontology from architectural and system engineering viewpoints. It provides guidance for systems and architecture design emphasizing human-system integration (HSI) requirements and constraints. While adopting a holistic approach, this complex domain is stratified using a three-dimensional roadmap (lifecycle, function, location) that guides the user to a high-level, fundamental, and context-specific design requirement based on the HSF program, mission, and spacecraft goals.

## ASTM (ASTM International)

Contact: Laura Klineburger, (610) 832-9744, [accreditation@astm.org](mailto:accreditation@astm.org)  
100 Barr Harbor Drive, West Conshohocken, PA 19428-2959

### New Standard

BSR/ASTM WK71656-202x, New Guide for Standard Guide for Evaluation of Nuclear Graphite Surface Area and Porosity by Gas Adsorption Measurements (new standard)

Stakeholders: Manufactured Carbon and Graphite Products industry.

Project Need: The purpose of this Guide is to provide methodologic information specific to highly graphitized, low surface area materials used in the nuclear industry.

This document provides recommendations and practical information related to the nitrogen adsorption method, including guidance on specimen preparation, selection of experimental conditions, data processing, and interpretation of results. Other porosity characterization methods used for nuclear graphite, such as krypton adsorption at 77 K, argon adsorption at either 77 K or 87 K, helium pycnometry, and mercury intrusion porosimetry, are not in the scope of this Guide.

## AWS (American Welding Society)

Contact: Marty Lucia, (305) 443-9353, [mlucia@aws.org](mailto:mlucia@aws.org)  
8669 NW 36th Street, # 130, Miami, FL 33166

### New Standard

BSR/AWS B5.16-202x, Specification for the Qualification of Welding Engineering Personnel (new standard)

Stakeholders: Welding engineers, those employing welding engineers, universities or colleges that provide welding engineering degrees, those working with or contracting welding engineers, welding industry, structural steel, marine, aerospace, etc.

Project Need: Need to revise and update current revision to incorporate new data.

This specification establishes the requirements for qualification of Welding Engineering Technologists, Associate Welding Engineers, Welding Engineers, and Senior Welding Engineers employed in the welding industry. The minimum experience, examination, application, qualification, and requalification requirements and methods are defined in this standard. This specification is a method for engineering personnel to establish a record of their qualification and abilities in welding industry work such as development of procedures, processes controls, quality standards, problem solving, etc.

**Revision**

BSR/AWS B5.17-202x, Specification for the Qualification of Welding Fabricators (revision of ANSI/AWS B5.17-2014)

Stakeholders: Welding fabricators, those employing welding fabricators, those working with or contracting accredited facility, AWS auditors, management including production managers, those working with "quality manuals" and audit checklists, those conducting quality manual reviews, shop reviews.

Project Need: Need to revise and update current revision to incorporate new data.

This standard establishes the minimum requirements necessary to qualify as a Welding Fabricator. The qualification is determined based on an examination of the implementation of the fabricator's Quality Manual to verify compliance to the requirements defined in this specification. This document also defines the Welding Fabricator's functions and lists the minimum reference materials that the Welding Fabricator should possess.

**B11 (B11 Standards, Inc.)**

Contact: Chris Felinski, (832) 446-6999, [cfelinski@b11standards.org](mailto:cfelinski@b11standards.org)  
P.O. Box 690905, Houston, TX 77269

**Revision**

BSR/B11.17-202x, Safety Requirements for Horizontal Hydraulic Extrusion Presses (revision of ANSI B11.17-2004 (R2015))

Stakeholders: Manufacturers, users.

Project Need: Update current standard with harmonized technical elements.

The requirements of this standard apply only to those horizontal hydraulically powered presses that extrude metals by means of applying sufficient pressure to an individual metal billet, confined within a container, to force the metal to be extruded through the configured openings of a die. The horizontal hydraulic extrusion press, referred to as a press in this standard, is a hydraulically powered machine that functions to extrude metals horizontally either by the direct or indirect process. It includes the components necessary to handle and process metals from the loading mechanism through the platen exit or external butt shear. Components include control systems, hydraulic power systems, main force application cylinder and ram, auxiliary hydraulic and pneumatic cylinders that move components that are an integral part of the extruding machine, material loading mechanism, material pressure containment device, tooling used to apply forces to and form the material, tool handling equipment that function with the press operating cycle, shearing mechanisms, and process and equipment lubricating devices.

BSR/B11.25-202x, Safety Requirements for Large Machines (revision of ANSI B11.25-2015)

Stakeholders: Manufacturers, users.

Project Need: Update technical requirements.

This standard applies to machines with a work envelope equal to or greater than two cubic meters (2 m<sup>3</sup>) or two meters of linear axis travel, or where personnel are regularly required to enter into the working envelope to perform work or tasks. The requirements in this standard apply to all large machines, unless they are specifically covered in or by another standard. This document is intended to be used with both ANSI B11.0 and ANSI B11.19 to execute the risk assessment process and the safeguarding of machinery, respectively.

**ESTA (Entertainment Services and Technology Association)**

Contact: Richard Nix, (212) 244-1505, [standards@esta.org](mailto:standards@esta.org)  
630 Ninth Avenue, Suite 609, New York, NY 10036-3748

**New Standard**

BSR E1.70-202x, Selection and Use of Ground Supported Winch Stands and Towers in the Entertainment Industry (new standard)

Stakeholders: All entertainment workers, performers, and audience members; manufacturers of these devices for use in the entertainment industry.

Project Need: There are currently no relevant industry standards that cover use of these items in the entertainment industry, but their use can be inherently dangerous to employees, performers, and guests. There have been recent cases of these types of devices failing due to improper use and the goal of this standard is to reduce the occurrence of misuse and injury by educating and informing others on how to select and use these devices properly and safely.

This document shall apply to the selection, assembly, and use of ground-supported, variable-height stands and towers containing manually operated winches to effect the lifting, lowering, and supporting of entertainment technology equipment. It shall also establish minimum design and inspection criteria for these devices when used in the entertainment industry.

**Revision**

BSR E1.6-1-202x, Entertainment Technology - Powered Hoist Systems (revision of ANSI E1.6-1-2019)

Stakeholders: Industry, manufacturers, general interest, designers, users.

Project Need: Correct errata in Section 6.6.

This standard is being opened for limited revision, with the scope of revisions applying only to section 6.6 of the standard. The revision(s) are necessary to correct errata in that section only. No other revisions will be considered or made at this time.



## **ITI (INCITS) (InterNational Committee for Information Technology Standards)**

Contact: Deborah Spittle, (202) 737-8888, [comments@standards.incits.org](mailto:comments@standards.incits.org)  
700 K Street NW, Suite 600, Washington, DC 20001

### **Revision**

INCITS 322-202x, Information Technology - Card Durability Test Methods (revision of INCITS 322-2015)

Stakeholders: ICT industry.

Project Need: To improve card service life testing methods based on experience since approval of the 2015 edition.

This Standard describes test methods for the evaluation of identification (ID) card durability. An ID card is defined as a card identifying its holder and issuer which may carry data required as input for the intended use of the card. This revision will review and update the test methods

INCITS 440-201x, Information Technology - Card Durability / Service Life (revision of INCITS 440-2015)

Stakeholders: ICT industry.

Project Need: Improve card use models based on experience since approval of the 2015 edition.

This Standard defines a method to determine a card application class for the intended car use. Once the service life application is determined, the Standard defines tests methods and requirements for the card application. This revision will review and update the accuracy of card use models.

## **NEMA (ASC C137) (National Electrical Manufacturers Association)**

Contact: Michael Erbesfeld, (703) 841-3262, [Michael.Erbesfeld@nema.org](mailto:Michael.Erbesfeld@nema.org)  
1300 N 17th St Suite 900, Rosslyn, VA 22209

### **Revision**

BSR/C137.4-202X, Standard for Digital Interface with Auxiliary Power for Devices (revision of ANSI C137.4-2019)

Stakeholders: Producers, users, general interest.

Project Need: This project is needed to revise current standard to include requirements and memory bank definitions for energy reporting, diagnostics, and maintenance data. Also, the range of auxiliary power will be considered for further inclusivity in order to cover more ranges and applications.

This standard specifies the requirements for a digital addressable lighting interface between a driver and a device, such as a sensor or communication device. It includes the auxiliary power, electro- mechanical interface and communication protocol requirements. This standard builds on the interface specified in the IEC 62386 series of standards, by adding specific requirements to enable powering of a device and addressing data exchange.

## **OEOSC (ASC OP) (Optics and Electro-Optics Standards Council)**

Contact: Allen Krisiloff, (585) 473-4470, [allen@oeosc.org](mailto:allen@oeosc.org)  
c/o Triptar Lens Company, Inc., 439 Monroe Avenue, Rochester, NY 14607

### **New National Adoption**

BSR OEOSC OP1.10110-1-202x, Optics and Electro-Optical Instruments - Preparation of drawings for optical elements and systems - Part 1: General (identical national adoption of ISO 10110-1:2019)

Stakeholders: Designers, manufacturers, and users of optical components and optical systems.

Project Need: Standardized drawings of optical elements and systems improve the quality of communication between suppliers and customers.

This document specifies the general layout of drawings for optical elements and systems. It defines formats, notations, and indications that apply throughout the other parts of the ISO 10110 series of optical drawing standards.

BSR OEOSC OP1.10110-11-202x, Optics and Electro-Optical Instruments - Preparation of drawings for optical elements and systems - Part 11: Non-toleranced data (identical national adoption of ISO 10110-11:2016)

Stakeholders: Designers, manufacturers, and users of optical components and optical systems.

Project Need: Standardized drawings of optical elements and systems improve the quality of communication between suppliers and customers.

This document is a part of the ISO 10110 series of technical drawing standards for optical elements and systems. It specifies the permissible deviations and material imperfections when these are not explicitly indicated.

BSR OEOSC OP1.10110-12-202x, Optics and Electro-Optical Instruments - Preparation of drawings for optical elements and systems - Part 12: Aspheric surfaces (identical national adoption of ISO 10110-12:2019)

Stakeholders: Designers, manufacturers, and users of optical components and optical systems.

Project Need: Standardized drawings of optical elements and systems improve the quality of communication between suppliers and customers.

This document is a part of the ISO 10110 series of technical drawing standards for optical elements and systems. It specifies rules for presentation of aspheric surfaces and surfaces with low order symmetry, such as cylinders and toroids. It also specifies sign conventions and coordinate systems. This document does not apply to off-axis aspheric and discontinuous surfaces, such as Fresnel surfaces or gratings.

BSR OEOSC OP1.10110-14-202x, Optics and Electro-Optical Instruments - Preparation of drawings for optical elements and systems - Part 14: Wavefront deformation tolerance (identical national adoption of ISO 10110-14:2018)

Stakeholders: Designers, manufacturers, and users of optical components and optical systems.

Project Need: Standardized drawings of optical elements and systems improve the quality of communication between suppliers and customers.

This document is a part of the ISO 10110 series of technical drawing standards for optical elements and systems. It specifies rules for the indication of the permissible deformation of a wavefront transmitted through or reflected from optical components and systems. There is no requirement that a tolerance for the deformation be indicated. The tilt of a wavefront with respect to a reference surface is not addressed in this document.

BSR OEOSC OP1.10110-18-202x, Optics and Electro-Optical Instruments - Preparation of drawings for optical elements and systems - Part 18: Stress birefringence, bubbles and inclusions, homogeneity, and striae (identical national adoption of ISO 10110-18:2018)

Stakeholders: Designers, manufacturers, and users of optical components and optical systems.

Project Need: Standardized drawings of optical elements and systems improve the quality of communication between suppliers and customers.

This document is a part of the ISO 10110 series of technical drawing standards for optical elements and systems. It specifies the indication of tolerances for four categories of imperfections within optical materials: stress birefringence, bubbles and inclusions, homogeneity, and striae. Tolerances may be applied to a finished optical part, a finished system of optical parts, or to the raw material used to manufacture an optical part.

BSR OEOSC OP1.10110-19-202x, Optics and Electro-Optical Instruments - Preparation of drawings for optical elements and systems - Part 19: General description of surfaces and components (identical national adoption of ISO 10110-19:2015)

Stakeholders: Designers, manufacturers, and users of optical components and optical systems.

Project Need: Standardized drawings of optical elements and systems improve the quality of communication between suppliers and customers.

This document is a part of the ISO 10110 series of technical drawing standards for optical elements and systems. It provides a general method of describing surfaces and components. It applies to continuous and discontinuous surfaces, but not to diffractive surfaces, Fresnel surfaces, ophthalmic glasses, and micro-optical surfaces. The method may be applied to any general surface or component, even rotationally symmetric surfaces, when they are defined in terms of NURBS, splines, point clouds, etc.

BSR OEOSC OP1.10110-5-202x, Optics and Electro-Optical Instruments - Preparation of drawings for optical elements and systems - Part 5: Surface form tolerances (identical national adoption of ISO 10110-5:2015)

Stakeholders: Designers, manufacturers, and users of optical components and optical systems.

Project Need: Standardized drawings of optical elements and systems improve the quality of communication between suppliers and customers.

This document is a part of the ISO 10110 series of technical drawing standards for optical elements and systems. It specifies rules for indicating the tolerance for surface form deviations.

BSR OEOSC OP1.10110-6-202x, Optics and Electro-Optical Instruments - Preparation of drawings for optical elements and systems - Part 6: Centering tolerances (identical national adoption of ISO 10110-6:2015)

Stakeholders: Designers, manufacturers, and users of optical components and optical systems.

Project Need: Standardized drawings of optical elements and systems improve the quality of communication between suppliers and customers.

This document is a part of the ISO 10110 series of technical drawing standards for optical elements and systems. It specifies rules for indicating the tolerances for centration.

BSR OEOSC OP1.10110-8-202x, Optics and Electro-Optical Instruments - Preparation of drawings for optical elements and systems  
- Part 8: Surface texture (identical national adoption of ISO 10110-8:2019)

Stakeholders: Designers, manufacturers, and users of optical components and optical systems.

Project Need: Standardized drawings of optical elements and systems improve the quality of communication between suppliers and customers.

This document is a part of the ISO 10110 series of technical drawing standards for optical elements and systems. It specifies rules for indicating the tolerances for surface texture that can be effectively described with statistical methods. Typically, surface texture is associated with high spatial frequency errors (roughness) and mid-spatial frequency errors (waviness).

BSR OEOSC OP1.10110-9-202x, Optics and Electro-Optical Instruments - Preparation of drawings for optical elements and systems  
- Part 8: Surface treatment and coating (identical national adoption of ISO 10110-9:2016)

Stakeholders: Designers, manufacturers, and users of optical components and optical systems.

Project Need: Standardized drawings of optical elements and systems improve the quality of communication between suppliers and customers.

This document is a part of the ISO 10110 series of technical drawing standards for optical elements and systems. It specifies rules for indicating the treatments and coatings applied to optical surfaces for functional and/or protective purposes.

## **SCTE (Society of Cable Telecommunications Engineers)**

Contact: Kim Cooney, (800) 542-5040, [kcooney@scte.org](mailto:kcooney@scte.org)  
140 Philips Rd, Exton, PA 19341

### **Revision**

BSR/SCTE 215-1-202x, HEVC Video Constraints for Cable Television - Part 1: Coding (revision of ANSI/SCTE 215-1-2018)

Stakeholders: Telecommunications.

Project Need: Update to current technology.

This document defines the coding constraints on ITU-T Rec. H.265 | ISO/IEC 23008-2 video compression (called "HEVC" in this standard) for Cable Television. In particular, this document describes the coding of a single HEVC coded video elementary stream carried in MPEG-2 transport (ISO/IEC 13818-1) for linear delivery systems supporting ad insertion services. Beyond linear delivery with DPI, signaling is provided for segmentation of content for xDVR applications.

BSR/SCTE 215-1-1-202x, HEVC Video Constraints for Cable Television - Part 1-1: HDR10 Coding (revision of ANSI/SCTE 215-1-1-2018)

Stakeholders: Cable Telecommunications industry.

Project Need: Update current technology.

This document defines the additional coding constraints on SCTE 215-1 HDR video streams using an HDR10 format.

# American National Standards Maintained Under Continuous Maintenance

The ANSI Essential Requirements: Due Process Requirements for American National Standards provides two options for the maintenance of American National Standards (ANS): periodic maintenance (see clause 4.7.1) and continuous maintenance (see clause 4.7.2). Continuous maintenance is defined as follows:

The standard shall be maintained by an accredited standards developer. A documented program for periodic publication of revisions shall be established by the standards developer. Processing of these revisions shall be in accordance with these procedures. The published standard shall include a clear statement of the intent to consider requests for change and information on the submittal of such requests. Procedures shall be established for timely, documented consensus action on each request for change and no portion of the standard shall be excluded from the revision process. In the event that no revisions are issued for a period of four years, action to reaffirm or withdraw the standard shall be taken in accordance with the procedures contained in the ANSI Essential Requirements.

The Executive Standards Council (ExSC) has determined that for standards maintained under the Continuous Maintenance option, separate PINS announcements are not required. The following ANSI Accredited Standards Developers have formally registered standards under the Continuous Maintenance option

- AAMI (Association for the Advancement of Medical Instrumentation)
- AARST (American Association of Radon Scientists and Technologists)
- AGA (American Gas Association)
- AGSC-AGRSS (Auto Glass Safety Council)
- ASC X9 (Accredited Standards Committee X9, Incorporated)
- ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.)
- ASME (American Society of Mechanical Engineers)
- ASTM (ASTM International)
- GBI (Green Building Initiative)
- HL7 (Health Level Seven)
- IES (Illuminating Engineering Society)
- ITI (InterNational Committee for Information Technology Standards)
- MHI (Material Handling Industry)
- NAHBRC (NAHB Research Center, Inc.)
- NBBPVI (National Board of Boiler and Pressure Vessel Inspectors)
- NCPDP (National Council for Prescription Drug Programs)
- NEMA (National Electrical Manufacturers Association)
- NISO (National Information Standards Organization)
- NSF (NSF International)
- PRCA (Professional Ropes Course Association)
- RESNET (Residential Energy Services Network, Inc.)
- SAE (SAE International)
- TCNA (Tile Council of North America)
- TIA (Telecommunications Industry Association)
- UL (Underwriters Laboratories, Inc.)

To obtain additional information with regard to these standards, including contact information at the ANSI Accredited Standards Developer, please visit ANSI Online at [www.ansi.org/asd](http://www.ansi.org/asd), select "Standards Activities," click on "Public Review and Comment" and "American National Standards Maintained Under Continuous Maintenance." This information is also available directly at [www.ansi.org/publicreview](http://www.ansi.org/publicreview)

Alternatively, you may contact the Procedures & Standards Administration department (PSA) at [psa@ansi.org](mailto:psa@ansi.org) or via fax at 212-840-2298. If you request that information be provided via E-mail, please include your E-mail address; if you request that information be provided via fax, please include your fax number. Thank you.

# ANSI-Accredited Standards Developers Contact Information

The addresses listed in this section are to be used in conjunction with standards listed in PINS, Call for Comment and Final Actions. This section is a list of developers who have submitted standards for this issue of *Standards Action* – it is not intended to be a list of all ANSI-Accredited Standards Developers. Please send all address corrections to Standards Action Editor at [standact@ansi.org](mailto:standact@ansi.org).

<b>AAFS</b> American Academy of Forensic Sciences 410 North 21st Street Colorado Springs, CO 80904 Phone: (719) 453-1036 Web: <a href="http://www.aafs.org">www.aafs.org</a>	<b>ASME</b> American Society of Mechanical Engineers Two Park Avenue M/S 6-2B New York, NY 10016-5990 Phone: (212) 591-8489 Web: <a href="http://www.asme.org">www.asme.org</a>	<b>CSA</b> CSA America Standards Inc. 8501 E. Pleasant Valley Road Cleveland, OH 44131 Phone: (216) 524-4990 Web: <a href="http://www.csagroup.org">www.csagroup.org</a>	<b>NEMA (ASC C137)</b> National Electrical Manufacturers Association 1300 N 17th St Suite 900 Rosslyn, VA 22209 Phone: (703) 841-3262 Web: <a href="http://www.nema.org">www.nema.org</a>
<b>AARST</b> American Association of Radon Scientists and Technologists 527 Justice Street Hendersonville, NC 28739 Phone: (202) 830-1110 Web: <a href="http://www.aarst.org">www.aarst.org</a>	<b>ASNT</b> American Society for Nondestructive Testing 1711 Arlingate Lane Columbus, OH 43228 Phone: (614) 384-2468 Web: <a href="http://www.asnt.org">www.asnt.org</a>	<b>CTA</b> Consumer Technology Association 1919 South Eads Street Arlington, VA 22202 Phone: (703) 907-7697 Web: <a href="http://www.cta.tech">www.cta.tech</a>	<b>NEMA (ASC C8)</b> National Electrical Manufacturers Association 1300 North 17th Street Rosslyn, VA 22209 Phone: (703) 841-3278 Web: <a href="http://www.nema.org">www.nema.org</a>
<b>ACI</b> American Concrete Institute 38800 Country Club Drive Farmington Hills, MI 48331 Phone: (248) 848-3728 Web: <a href="http://www.concrete.org">www.concrete.org</a>	<b>ASTM</b> ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2959 Phone: (610) 832-9744 Web: <a href="http://www.astm.org">www.astm.org</a>	<b>ESTA</b> Entertainment Services and Technology Association 630 Ninth Avenue Suite 609 New York, NY 10036-3748 Phone: (212) 244-1505 Web: <a href="http://www.esta.org">www.esta.org</a>	<b>NEMA (ASC C81)</b> National Electrical Manufacturers Association 1300 North 17th Street Suite 900 Rosslyn, VA 22209 Phone: (703) 841-3262 Web: <a href="http://www.nema.org">www.nema.org</a>
<b>AGA (ASC Z380)</b> American Gas Association 400 North Capitol Street, NW Suite 450 Washington, DC 20001 Phone: (202) 824-7339 Web: <a href="http://www.aga.org">www.aga.org</a>	<b>AWS</b> American Welding Society 8669 NW 36th Street # 130 Miami, FL 33166 Phone: (305) 443-9353 Web: <a href="http://www.aws.org">www.aws.org</a>	<b>IAPMO (ASSE Chapter)</b> ASSE International Chapter of IAPMO 18927 Hickory Creek Drive Suite 220 Mokena, IL 60448 Phone: (708) 995-3015 Web: <a href="http://www.asse-plumbing.org">www.asse-plumbing.org</a>	<b>NSF</b> NSF International 789 N. Dixboro Road Ann Arbor, MI 48105-9723 Phone: (734) 827-6866 Web: <a href="http://www.nsf.org">www.nsf.org</a>
<b>AGMA</b> American Gear Manufacturers Association 1001 N Fairfax Street 5th Floor Alexandria, VA 22314-1587 Phone: (703) 684-0211 Web: <a href="http://www.agma.org">www.agma.org</a>	<b>AWWA</b> American Water Works Association 6666 W. Quincy Ave. Denver, CO 80235 Phone: (303) 347-6178 Web: <a href="http://www.awwa.org">www.awwa.org</a>	<b>IES</b> Illuminating Engineering Society 120 Wall Street, Floor 17 New York, NY 10005 Phone: (917) 913-0027 Web: <a href="http://www.ies.org">www.ies.org</a>	<b>OEOSC (ASC OP)</b> Optics and Electro-Optics Standards Council c/o Triptar Lens Company, Inc. 439 Monroe Avenue Rochester, NY 14607 Phone: (585) 473-4470 Web: <a href="http://www.optstd.org">www.optstd.org</a>
<b>AIAA</b> American Institute of Aeronautics and Astronautics 12700 Sunrise Valley Drive, Suite 200 Reston, VA 20191-5807 Phone: (703) 264-7546 Web: <a href="http://www.aiaa.org">www.aiaa.org</a>	<b>B11</b> B11 Standards, Inc. P.O. Box 690905 Houston, TX 77269 Phone: (832) 446-6999 Web: <a href="https://www.b11standards.org">https://www.b11standards.org</a>	<b>ITI (INCITS)</b> InterNational Committee for Information Technology Standards 700 K Street NW Suite 600 Washington, DC 20001 Phone: (202) 737-8888 Web: <a href="http://www.incits.org">www.incits.org</a>	<b>SCTE</b> Society of Cable Telecommunications Engineers 140 Philips Rd Exton, PA 19341 Phone: (800) 542-5040 Web: <a href="http://www.scte.org">www.scte.org</a>
<b>ASHRAE</b> American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. 1791 Tullie Circle, NE Atlanta, GA 30329-2305 Phone: (404) 636-8400 Web: <a href="http://www.ashrae.org">www.ashrae.org</a>	<b>BIFMA</b> Business and Institutional Furniture Manufacturers Association 678 Front Ave. NW Grand Rapids, MI 49504 Phone: (616) 591-9798 Web: <a href="http://www.bifma.org">www.bifma.org</a>	<b>NEMA (ASC C136)</b> National Electrical Manufacturers Association 1300 North 17th Street Suite 900 Rosslyn, VA 22209 Phone: (703) 841-3234 Web: <a href="http://www.nema.org">www.nema.org</a>	<b>UL</b> Underwriters Laboratories, Inc. 12 Laboratory Drive Research Triangle Park, NC 27709-3995 Phone: (919) 549-1851 Web: <a href="http://www.ul.com">www.ul.com</a>
	<b>BOMA</b> Building Owners and Managers Association 1101 15th Street, NW Washington, DC 20005 Phone: (202) 326-6357 Web: <a href="http://www.boma.org">www.boma.org</a>		



# ISO & IEC Draft International Standard

This section lists proposed standards that the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) are considering for approval. The proposals have received substantial support within the technical committees or subcommittees that developed them and are now being circulated to ISO and IEC members for comment and vote. Standards Action readers interested in reviewing and commenting on these documents should order copies from ANSI.

## Comments

Comments regarding ISO documents should be sent to ANSI's ISO Team (isot@ansi.org); comments on ISO documents must be submitted electronically in the approved ISO template and as a Word document as other formats will not be accepted.

Those regarding IEC documents should be sent to Tony Zertuche, General Secretary, USNC/IEC, at ANSI's New York offices (tzertuche@ansi.org). The final date for offering comments is listed after each draft.

## Ordering Instructions

**ISO and IEC Drafts can be made available by contacting ANSI's Customer Service department. Please e-mail your request for an ISO or IEC Draft to Customer Service at sales@ansi.org. When making your request, please provide the date of the Standards Action issue in which the draft document you are requesting appears.**

## ISO Standards

### ADDITIVE MANUFACTURING (TC 261)

ISO/ASTM DIS 52924, Additive manufacturing - Qualification principles - Classification of part properties for additive manufacturing of polymer parts - 5/1/2020, \$71.00

### AIRCRAFT AND SPACE VEHICLES (TC 20)

ISO/DIS 14200, Space environment (natural and artificial) - Guide to process-based implementation of meteoroid and debris environment models (orbital altitudes below GEO + 2 000 km) - 4/30/2020, \$71.00

### DENTISTRY (TC 106)

ISO/DIS 21563, Dentistry - Hydrocolloid impression materials - 4/30/2020, \$112.00

### DOORS AND WINDOWS (TC 162)

ISO/DIS 22496, Windows and pedestrian doors - Terminology - 4/26/2020, \$107.00

ISO/DIS 22497, Curtain walling - Terminology - 4/26/2020, \$71.00

### ENVIRONMENTAL MANAGEMENT (TC 207)

ISO/DIS 14030-1, Environmental performance evaluation - Green debt instruments - Part 1: Process for green bonds - 4/26/2020, \$62.00

### GRAPHIC TECHNOLOGY (TC 130)

ISO/DIS 12647-9, Graphic technology - Process control for the production of half-tone colour separations, proof and production prints - Part 9: Metal decoration printing processes using offset lithography - 4/26/2020, \$62.00

### IMPLANTS FOR SURGERY (TC 150)

ISO/DIS 14708-4, Implants for surgery - Active implantable medical devices - Part 4: Implantable infusion pump systems - 4/26/2020, \$134.00

### ROAD VEHICLES (TC 22)

ISO/DIS 6622-1, Internal combustion engines - Piston rings - Part 1: Rectangular rings made of cast iron - 11/11/2023, \$77.00

ISO/DIS 13209-4, Road vehicles - Open test sequence eXchange format (OTX) - Part 4: Expanded extensions interface definition - 4/23/2020, \$291.00

ISO/DIS 15500-17, Road vehicles - Compressed natural gas (CNG) fuel system components - Part 17: Flexible fuel line - 4/27/2020, \$46.00

### SHAFTS FOR MACHINERY AND ACCESSORIES (TC 14)

ISO/DIS 4156-1, Straight cylindrical involute splines - Metric module, side fit - Part 1: Generalities - 5/2/2020, \$134.00

ISO/DIS 4156-3, Straight cylindrical involute splines - Metric module, side fit - Part 3: Inspection - 5/2/2020, \$119.00

### SURFACE ACTIVE AGENTS (TC 91)

ISO/DIS 21680, Surface active agents - Bio-based surfactants - Requirements and test methods - 5/1/2020, \$53.00

### TERMINOLOGY (PRINCIPLES AND COORDINATION) (TC 37)

ISO/DIS 24620-3, Language resource management - Controlled human communication (CHC) - Part 3: Basic principles and methodology for controlled oral communication (COraCom) - 4/27/2020, \$93.00

### TEXTILES (TC 38)

ISO/DIS 1833-18, Textiles - Quantitative chemical analysis - Part 18: Mixtures of silk with other protein fibres (method using sulfuric acid) - 5/2/2020, \$33.00

### WATER RE-USE (TC 282)

ISO/DIS 22238, Wastewater reuse - A guideline to wastewater disinfection and equivalent treatments - 4/23/2020, \$112.00

## ISO/IEC JTC 1, Information Technology

ISO/IEC DIS 17549-1, Information technology - User interface guidelines on menu navigation - Part 1: Framework - 5/1/2020, \$53.00

## IEC Standards

2/1990/DC, Proposed corrigendum for IEC 60034-18-41:2014 + AMD1:2019 ED1: Rotating electrical machines - Part 18-41: Partial discharge free electrical insulation systems (Type I) used in rotating electrical machines fed from voltage converters - Qualification and quality control tests, 2020/3/20

17C/739/CDV, IEC 62271-200 ED3: High-voltage switchgear and controlgear - Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV, 020/5/1/

- 21/1040/FDIS, IEC 62984-3 ED1: High-temperature secondary batteries - Part 3: Sodium-based batteries - Performance requirements and tests, 2020/3/20
- 23E/1180/FDIS, IEC 62020-1 ED1: Electrical accessories - Residual current monitors for household and similar uses (RCMs), 2020/3/20
- 23H/464/CDV, IEC 62196-6 ED1: Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 6: Dimensional compatibility requirements for DC pin and contact-tube vehicle couplers for DC EV supply equipment where protection relies on electrical separation, 020/5/1/
- 27/1124A/CD, IEC 60519-6 ED4: Safety in installations for electroheating and electromagnetic processing - Part 6: Particular requirements for high frequency dielectric and microwave heating and processing equipment, 2020/4/10
- 34/680/CD, IEC 62386-150 ED1: Digital addressable lighting interface - Part 150: Auxiliary Power Supply, 020/5/1/
- 34/684/CD, IEC 62386-253 ED1: Digital addressable lighting interface - Part 253: Particular requirements - Diagnostics and maintenance (Device Type 52), 020/5/1/
- 34/686/CD, IEC 63117 ED1: General requirements for lighting systems - Safety, 020/5/1/
- 34/681/CD, IEC 62386-250 ED1: Digital addressable lighting interface - Part 250: Particular requirements - Integrated Power Supply (Device Type 49), 020/5/1/
- 34/683/CD, IEC 62386-252 ED1: Digital addressable lighting interface - Part 252: Particular requirements - Energy Reporting (Device Type 51), 020/5/1/
- 34/682/CD, IEC 62386-251 ED1: Digital addressable lighting interface - Part 251: Particular requirements - Memory bank 1 extension (Device Type 50), 020/5/1/
- 34B/2077/FDIS, IEC 60061-1/AMD60 ED3: Amendment 60 - Lamp caps and holders together with gauges for the control of interchangeability and safety - Part 1: Lamps Caps, 2020/3/20
- 38/615/NP, PNW 38-615 ED1: Instrument transformers - Part 7: Specific requirements for electronic Voltage Transformers, 020/5/1/
- 38/616/NP, PNW 38-616 ED1: Instrument transformers - Part 8: Specific requirements for electronic Current Transformers, 020/5/1/
- 40/2735/DC, Proposal of a Technical Corrigendum to IEC 60384-26 Ed.2.0: Fixed capacitors for use in electronic equipment - Part 26: Sectional specification - Fixed aluminium electrolytic capacitors with conductive polymer solid electrolyte, 2020/3/20
- 45A/1310/CD, IEC/IEEE 62582-4 ED2: Nuclear power plants - Instrumentation and control important to safety - Electrical equipment condition monitoring methods - Part 4: Oxidation induction techniques, 020/5/1/
- 47A/1092/NP, PNW 47A-1092: Future IEC 62228-6: Integrated circuit - EMC Evaluation of transceivers - Part 6: PS15 transceivers, 020/5/1/
- 47D/919/NP, PNW 47D-919: Part model guideline for electronic-device packages - Part 1: XML requirements, 020/5/1/
- 47F/354/CD, IEC 62047-38 ED1: Semiconductor devices - Micro-electromechanical devices - Part 38: Test method for adhesion strength of metal powder paste in MEMS interconnection, 020/5/1/
- 56/1886/CD, IEC 60300-1 ED4: Dependability management - Part 1: Enabling dependability, 020/5/1/
- 59/722/FDIS, IEC 63086-1 ED1: Household and similar electrical air cleaning appliances - Methods for measuring the performance - Part 1: General requirements, 2020/3/20
- 61/5999/DISH, IEC 60335-1/AMD2/ISH1 ED5: Interpretation Sheet 1 - Amendment 2 - Household and similar electrical appliances - Safety - Part 1: General requirements, 2020/3/20
- 62D/1753/CDV, ISO 80601-2-87 ED1: Medical electrical equipment - Part 2-87: Particular requirements for the basic safety and essential performance of high frequency critical care ventilators, 020/5/1/
- 62D/1754/CDV, ISO 81060-3 ED1: Non-invasive sphygmomanometers - Part 3: Clinical investigation of continuous non-invasive automated measurement type, 020/5/1/
- 69/715/CD, IEC 62840-1 ED1: Electric vehicle battery swap system - Part 1: General and guidance, 020/4/3/
- 69/701/CDV, IEC 61851-24 ED2: Electric vehicle conductive charging system - Part 24: Digital communication between a DC EV charging station and an electric vehicle for control of DC charging, 020/5/1/
- 69/702/CDV, IEC 61851-23 ED2: Electric vehicle conductive charging system - Part 23: DC electric vehicle supply equipment, 020/5/1/
- 79/630/CDV, IEC 60839-11-33 ED1: Alarm and electronic security systems - Part 11-33: Electronic access control systems - Access control configuration based on web services, 020/5/1/
- 86B/4270/FDIS, IEC 61753-061-2 ED2: Fibre optic interconnecting devices and passive components - Performance standard - Part 061-2: Single-mode fibre optic pigtailed style polarization independent isolators for category C - Controlled environments, 2020/3/20
- 86B/4271/FDIS, IEC 61754-35 ED1: Fibre optic interconnecting devices and passive components - Fibre optic connector interfaces - Part 35: Type LSHE connector family for harsh environments, 2020/3/20
- 91/1639/FDIS, IEC 61189-5-504 ED1: Test methods for electrical materials, printed boards and other interconnection structures and assemblies - Part 5-504: General test methods for materials and assemblies - Process ionic contamination testing (PICT), 2020/3/20
- 91/1640/DTR, IEC TR 61188-8 ED1: Circuit boards and circuit board assemblies - Design and use - Part 8: 3D shape data for CAD component library, 020/4/3/
- 95/426/CD, IEC 60255-26 ED4: Measuring relays and protection equipment - Part 26: Electromagnetic compatibility requirements, 020/5/1/
- 100/3391/CD, IEC 61937-2 ED3: Digital audio - Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 - Part 2: Burst-info (TA 20), 020/5/1/
- 104/863/NP, PNW 104-863: Environmental Testing - Part 2: Tests - Test Fx: Multi-Exciter and Multi-Axis Shock and Vibration Testing and Guidance, 020/5/1/
- 105/787/DTS, IEC TS 62282-9-101 ED1: Fuel cell technologies - Part 9-101: Evaluation methodology for the environmental performance of fuel cell power systems based on life cycle thinking - Streamlined life-cycle considered environmental performance characterization of stationary fuel cell power systems for residential applications, 020/5/1/
- 120/173/FDIS, IEC 62933-5-2 ED1: Electrical energy storage (EES) systems - Part 5-2: Safety requirements for grid integrated EES systems - Electrochemical based systems, 2020/3/20
- 121A/334/CDV, IEC 60947-6-1 ED3: Low-voltage switchgear and controlgear - Part 6-1: Multiple function equipment - Transfer switching equipment, 020/5/1/
- 121A/340/FDIS, IEC 60947-3 ED4: Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units, 2020/3/20
- 121A/341/CD, IEC TS 60947-7-5 ED1: Low-voltage switchgear and controlgear - Part 7-5: Ancillary equipment - Terminal blocks for aluminium conductors, 020/5/1/
- 121B/99/FDIS, IEC 61439-1 ED3: Low-voltage switchgear and controlgear assemblies - Part 1: General rules, 2020/3/20
- 124/95/CD, IEC 63203-201-1 ED1: Wearable electronic devices and technologies - Part 201-1: Electronic Textile - Measurement methods for basic properties of conductive yarns, 020/5/1/
- SyCAAL/179/NP, PNW TS SYCAAL-179: (SRD) Active Assisted Living (AAL) Management System Requirements for AAL Service Provider, 020/5/1/
- SyCSmartCities/127/NP, PNW TS SYCSMARTCITIES-127: Systems Reference Deliverable (SRD) - Use Case Collection and Analysis: Smart Urban Planning for Smart Cities, 020/5/1/
- SyCSmartCities/126/CD, IEC TS 63233 ED1: Smart City Standards Inventory and Mapping - Part 1: Methodology, 020/5/1/

SyCSmartCities/128/NP, PNW SYCSMARTCITIES-128 ED1: Systems  
Reference Deliverable (SRD) - Use Case Collection and Analysis:  
City Needs Analysis Framework, 020/5/1/  
JTC1-SC41/138/FDIS, ISO/IEC 21823-2 ED1: Internet of Things (IoT)  
- Interoperability for IoT systems - Part 2: Transport interoperability,  
020/4/3/





# Newly Published ISO & IEC Standards

Listed here are new and revised standards recently approved and promulgated by ISO - the International Organization for Standardization – and IEC – the International Electrotechnical Commission. Most are available at the ANSI Electronic Standards Store (ESS) at [www.ansi.org](http://www.ansi.org). All paper copies are available from Standards resellers (<http://webstore.ansi.org/faq.aspx#resellers>).

## ISO Standards

### AIRCRAFT AND SPACE VEHICLES (TC 20)

[ISO 21895:2020](#), Categorization and classification of civil unmanned aircraft systems, \$68.00

### ANALYSIS OF GASES (TC 158)

[ISO 6141/Amd1:2020](#), Gas analysis - Contents of certificates for calibration gas mixtures - Amendment 1: Cross reference list to ISO Guide 31:2015 and ISO/IEC 17025:2017, \$19.00

### APPLICATIONS OF STATISTICAL METHODS (TC 69)

[ISO 7870-7:2020](#), Control charts - Part 7: Multivariate control charts, \$138.00

### CINEMATOGRAPHY (TC 36)

[ISO 9642:2020](#), Cinematography - Time and control code for 24, 25 and 30 frames per second motion-picture film systems - Specifications, \$103.00

### CORROSION OF METALS AND ALLOYS (TC 156)

[ISO 8044:2020](#), Corrosion of metals and alloys - Vocabulary, \$45.00

### EQUIPMENT FOR FIRE PROTECTION AND FIRE FIGHTING (TC 21)

[ISO 7240-17:2020](#), Fire detection and fire alarm systems - Part 17: Transmission path isolators, \$162.00

### FINE CERAMICS (TC 206)

[ISO 23242:2020](#), Fine ceramics (advanced ceramics, advanced technical ceramics) - Test method for flexural strength of monolithic ceramic thin plates at room temperature by three-point or four-point bending, \$103.00

### HYDROGEN ENERGY TECHNOLOGIES (TC 197)

[ISO 17268:2020](#), Gaseous hydrogen land vehicle refuelling connection devices, \$185.00

### JEWELLERY (TC 174)

[ISO 15093:2020](#), Jewellery and precious metals - Determination of high purity gold, platinum and palladium - Difference method using ICP-OES, \$68.00

[ISO 15096:2020](#), Jewellery and precious metals - Determination of high purity silver - Difference method using ICP-OES, \$68.00

### MACHINE TOOLS (TC 39)

[ISO 19744:2020](#), Test conditions for numerically controlled broaching machines - Testing of accuracy - Vertical surface type broaching machines, \$185.00

### OPTICS AND OPTICAL INSTRUMENTS (TC 172)

[ISO 24157/Amd1:2020](#), Ophthalmic optics and instruments - Reporting aberrations of the human eye - Amendment 1, \$19.00

### PACKAGING (TC 122)

[ISO 16106:2020](#), Transport packages for dangerous goods - Dangerous goods packagings, intermediate bulk containers (IBCs) and large packagings - Guidelines for the application of ISO 9001, \$209.00

### PULLEYS AND BELTS (INCLUDING VEEBELTS) (TC 41)

[ISO 21178:2020](#), Light conveyor belts - Determination of electrical resistances, \$138.00

### ROAD VEHICLES (TC 22)

[ISO 14229-1:2020](#), Road vehicles - Unified diagnostic services (UDS) - Part 1: Application layer, \$232.00

[ISO 20794-2:2020](#), Road vehicles - Clock extension peripheral interface (CXPI) - Part 2: Application layer, \$185.00

[ISO 20794-3:2020](#), Road vehicles - Clock extension peripheral interface (CXPI) - Part 3: Transport and network layer, \$138.00

[ISO 20794-4:2020](#), Road vehicles - Clock extension peripheral interface (CXPI) - Part 4: Data link layer and physical layer, \$209.00

### SOIL QUALITY (TC 190)

[ISO 11074/Amd1:2020](#), Soil quality - Vocabulary - Amendment 1, \$45.00

[ISO 16558-1/Amd1:2020](#), Soil quality - Risk-based petroleum hydrocarbons - Part 1: Determination of aliphatic and aromatic fractions of volatile petroleum hydrocarbons using gas chromatography (static headspace method) - Amendment 1, \$19.00

### STEEL (TC 17)

[ISO 439:2020](#), Steel and cast iron - Determination of silicon content - Gravimetric method, \$68.00

[ISO 9647:2020](#), Steel - Determination of vanadium content - Flame atomic absorption spectrometric method (FAAS), \$103.00

### VACUUM TECHNOLOGY (TC 112)

[ISO 3669:2020](#), Vacuum technology - Dimensions of knife-edge flanges, \$68.00

## ISO Technical Specifications

### ANAESTHETIC AND RESPIRATORY EQUIPMENT (TC 121)

[ISO/TS 81060-5:2020](#), Non-invasive sphygmomanometers - Part 5: Requirements for the repeatability and reproducibility of NIBP simulators for testing of automated non-invasive sphygmomanometers, \$68.00

**FIRE SAFETY (TC 92)**

[ISO/TS 12828-3:2020](#), Validation method for fire gas analysis - Part 3: Considerations related to interlaboratory trials, \$68.00

**ISO/IEC JTC 1, Information Technology**

[ISO/IEC 21118:2020](#), Information technology - Office equipment - Information to be included in specification sheets for data projectors, \$138.00

[ISO/IEC 21471:2020](#), Information technology - Automatic identification and data capture techniques - Extended rectangular data matrix (DMRE) bar code symbology specification, \$209.00

[ISO/IEC 22624:2020](#), Information technology - Cloud computing - Taxonomy based data handling for cloud services, \$185.00

**IEC Standards****ELECTRICAL EQUIPMENT IN MEDICAL PRACTICE (TC 62)**

[IEC 61223-3-6 Ed. 1.0 b:2020](#), Evaluation and routine testing in medical imaging departments - Part 3-6: Acceptance and constancy tests - Imaging performance of mammographic X-ray equipment used in a mammographic tomosynthesis mode of operation, \$317.00

**ELECTRICAL INSTALLATIONS OF SHIPS AND OF MOBILE AND FIXED OFFSHORE UNITS (TC 18)**

[IEC 60092-354 Ed. 4.0 b:2020](#), Electrical installations in ships - Part 354: Single- and three-core power cables with extruded solid insulation for rated voltages 6 kV ( $U_m = 7,2$  kV) up to 30 kV ( $U_m = 36$  kV), \$117.00

[S+ IEC 60092-354 Ed. 4.0 en:2020 \(Redline version\)](#), Electrical installations in ships - Part 354: Single- and three-core power cables with extruded solid insulation for rated voltages 6 kV ( $U_m = 7,2$  kV) up to 30 kV ( $U_m = 36$  kV), \$152.00

**FIBRE OPTICS (TC 86)**

[IEC/PAS 63267-3-31 Ed. 1.0 en:2020](#), Fibre optic interconnecting devices and passive components - Fibre optic connector optical interfaces - Part 3-31: End face geometry - Flat PC PPS rectangular ferrule multimode fibres, \$82.00

**POWER SYSTEM CONTROL AND ASSOCIATED COMMUNICATIONS (TC 57)**

[IEC 61850-7-2 Amd.1 Ed. 2.0 b:2020](#), Amendment 1 - Communication networks and systems for power utility automation - Part 7-2: Basic information and communication structure - Abstract communication service interface (ACSI), \$387.00

[IEC 61850-7-2 Ed. 2.1 en:2020](#), Communication networks and systems for power utility automation - Part 7-2: Basic information and communication structure - Abstract communication service interface (ACSI), \$1055.00

[IEC 61850-7-3 Amd.1 Ed. 2.0 b:2020](#), Amendment 1 - Communication networks and systems for power utility automation - Part 7-3: Basic communication structure - Common data classes, \$375.00

[IEC 61850-7-3 Ed. 2.1 en:2020](#), Communication networks and systems for power utility automation - Part 7-3: Basic communication structure - Common data classes, \$762.00

**PRIMARY CELLS AND BATTERIES (TC 35)**

[IEC 60086-6 Ed. 1.0 b:2020](#), Primary batteries - Part 6: Guidance on environmental aspects, \$235.00

**SEMICONDUCTOR DEVICES (TC 47)**

[IEC 62779-4 Ed. 1.0 b:2020](#), Semiconductor devices - Semiconductor interface for human body communication - Part 4: Capsule endoscope, \$117.00

[IEC 60747-18-2 Ed. 1.0 en:2020](#), Semiconductor devices - Part 18-2: Semiconductor bio sensors - Evaluation process of lens-free CMOS photonic array sensor package modules, \$117.00

**IEC Technical Reports****FLAT PANEL DISPLAY DEVICES (TC 110)**

[IEC/TR 63211-2-12 Ed. 1.0 en:2020](#), Durability test methods for electronic displays - Part 2-12: Environmental tests - Environmental conditions of use, storage and transportation of electronic displays, \$235.00

**IEC Technical Specifications****INDUSTRIAL-PROCESS MEASUREMENT AND CONTROL (TC 65)**

[IEC/TS 63164-1 Ed. 1.0 en:2020](#), Reliability of industrial automation devices and systems - Part 1: Assurance of automation devices reliability data and specification of their source, \$164.00

**NANOTECHNOLOGY STANDARDIZATION FOR ELECTRICAL AND ELECTRONIC PRODUCTS AND SYSTEMS (TC 113)**

[IEC/TS 62607-4-8 Ed. 1.0 en:2020](#), Nanomanufacturing - Key control characteristics - Part 4-8: Nano-enabled electrical energy storage - Determination of water content in electrode nanomaterials, Karl Fischer method, \$117.00

# Proposed Foreign Government Regulations

## Call for Comment

U.S. manufacturers, exporters, regulatory agencies and standards developing organizations may be interested in proposed foreign technical regulations notified by Member countries of the World Trade Organization (WTO). In accordance with the WTO Agreement on Technical Barriers to Trade (TBT Agreement), Members are required to notify proposed technical regulations that may significantly affect trade to the WTO Secretariat in Geneva, Switzerland. In turn, the Secretariat issues and makes available these notifications. The purpose of the notification requirement is to provide global trading partners with an opportunity to review and comment on the regulations before they become final.

The USA Inquiry Point for the WTO TBT Agreement is located at the National Institute of Standards and Technology (NIST) in the Standards Coordination Office (SCO). The Inquiry Point distributes the notified proposed foreign technical regulations (notifications) and makes the associated full-texts available to U.S. stakeholders via its online service, Notify U.S. Interested U.S. parties can register with Notify U.S. to receive e-mail alerts when notifications are added from countries and industry sectors of interest to them.

To register for Notify U.S., please visit <http://www.nist.gov/notifyus/>.

The USA WTO TBT Inquiry Point is the official channel for distributing U.S. comments to the network of WTO TBT Enquiry Points around the world. U.S. business contacts interested in commenting on the notifications are asked to review the comment guidance available on Notify U.S. at <https://tsapps.nist.gov/notifyus/data/guidance/guidance.cfm> prior to submitting comments.

For further information about the USA TBT Inquiry Point, please visit: <https://www.nist.gov/standardsgov/what-we-do/trade-regulatory-programs/usa-wto-tbt-inquiry-point>

Contact the USA TBT Inquiry Point at: (301) 975-2918; Fax: (301) 926-1559; E-mail: [usatbtep@nist.gov](mailto:usatbtep@nist.gov) or [notifyus@nist.gov](mailto:notifyus@nist.gov).

# Information Concerning

## American National Standards

### Call for Members

#### INCITS Executive Board – ANSI Accredited SDO and US TAG to ISO/IEC JTC 1, Information Technology

The InterNational Committee for Information Technology Standards (INCITS), an ANSI accredited SDO, is the forum of choice for information technology developers, producers and users for the creation and maintenance of formal de jure IT standards. INCITS' mission is to promote the effective use of Information and Communication Technology through standardization in a way that balances the interests of all stakeholders and increases the global competitiveness of the member organizations.

The INCITS Executive Board serves as the consensus body with oversight of its 40+ Technical Committees. Additionally, the INCITS Executive Board has the international leadership role as the US Technical Advisory Group (TAG) to ISO/IEC JTC 1, Information Technology.

Membership in the INCITS Executive Board is open to all directly and materially affected parties in accordance with INCITS membership rules. To find out more about participating on the INCITS Executive Board, contact Jennifer Garner at [jgarner@itic.org](mailto:jgarner@itic.org) or visit <http://www.incits.org/participation/membership-info> for more information.

Membership in all interest categories is always welcome; however, the INCITS Executive Board seeks to broaden its membership base in the following categories:

- Service Providers
- Users
- Standards Development Organizations and Consortia
- Academic Institutions

### Society of Cable Telecommunications

#### ANSI Accredited Standards Developer

SCTE, an ANSI-accredited SDO, is the primary organization for the creation and maintenance of standards for the cable telecommunications industry. SCTE's standards mission is to develop standards that meet the needs of cable system operators, content providers, network and customer premises equipment manufacturers, and all others who have an interest in the industry through a fair, balanced and transparent process.

SCTE is currently seeking to broaden the membership base of its consensus bodies and is interested in new members in all membership categories to participate in new work in fiber-optic networks, advanced advertising, 3D television, and other important topics. Of particular interest is membership from the content (program and advertising) provider and user communities.

Membership in the SCTE Standards Program is open to all directly a materially affected parties as defined in SCTE's membership rules and operating procedures. More information is available at [www.scte.org](http://www.scte.org) or by e-mail from [standards@scte.org](mailto:standards@scte.org).

### Final Actions Correction

#### Rescinded Approval

##### ASHRAE/NEMA Standard 201-2016 (R2020)

At the request of the ANSI-Accredited Standards Developer ASHRAE, the approval of ASHRAE/NEMA Standard 201-2016 (R2020), Facility Smart Grid Information Model, as an American National Standard has been rescinded. Please direct any questions to: Tanisha Meyers-Lisle, (678) 539-1111, [tmlisle@ashrae.org](mailto:tmlisle@ashrae.org).

#### Withdrawal of ASD Accreditation and Related New and Proposed American National Standards

##### National Floor Safety Institute (NFSI)

The National Floor Safety Institute (NFSI) has requested the formal withdrawal of its accreditation as a developer of American National Standards (ANS), and of its sponsored-ANS:

##### Notice of Withdrawn NFSI ANS

**ANSI/NFSI B101.1-2009**, Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials (new standard)

**ANSI/NFSI B101.3-2012**, Test Method for Measuring Wet DCOF of Common Hard-Surface Floor Materials (Including Action and Limit Thresholds for the Suitable Assessment of the Measured Values) (new standard)

**ANSI/NFSI B101.5-2014**, Standard Guide for Uniform Labeling Method for Identifying the Wet Static and Wet Dynamic Coefficient of Friction (Traction) of Floor Coverings, Floor Coverings with Coatings, and Treated Floor Coverings (revision of ANSI/NFSI B101.5-2012)

**ANSI/NFSI B101.1-2009**, Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials (new standard)

##### Discontinuance of NFSI Standards Proposals

**BSR/NFSI B101.2-201x**, Test Method for Determining the Impact on Wet Coefficients of Friction of Various Chemical or Physical Walkway Surface Cleaners and Treatments on Common Hard-Surface Flooring Materials (new standard)

**BSR/NFSI B101.4-200x**, Test Method for Measuring the Wet Barefoot Condition of Flooring Materials or Products (new standard)

**BSR/NFSI B101.6-201x**, Standard Guide For Commercial Entrance Matting In Reducing Slips, Trips and Falls (new standard)

**BSR/NFSI B101.7-200x**, Standard Test Method for Lab Measurement of Footwear Outsole Material Slip Resistance (new standard)

**BSR/NFSI B101.8-201x**, Standard Guide for Floor Safety Management Program for Slip, Trip and Fall Prevention (new standard)

**BSR/NFSI B101.9-201x**, Standard Guide for Identification and Elimination of Interior and Exterior Pedestrian Trip Hazards on Walking Surfaces, Stairs, Steps and Ramps (new standard)

**BSR/NFSI B101.10-201x**, Standard for Preparing, Maintaining, Conditioning and Storing Tribometer Sensor Materials (new standard)

**BSR/NFSI B101.11-201x**, Standard for the prevention of climate related slips, trips and falls (new standard)

**BSR/NFSI B101.12-201x**, Standard Guide for the Application, Selection, and Use of Pedestrian Warnings as Related to the Prevention of Slips, Trips and Falls (new standard)

These actions are taken effective February 6, 2020. For additional information, please contact: Ms. Laura Cooper, National Floor Safety Institute, P.O. Box 92607, Southlake, TX 76092; phone: 817.749.1700; e-mail: [laurac@nfsi.org](mailto:laurac@nfsi.org).

## ANSI Accredited Standards Developers

### Reaccreditation

#### Cool Roof Rating Council (CRRC)

**Comment Deadline: March 16, 2020**

The Cool Roof Rating Council (CRRC), an ANSI member and Accredited Standards Developer, has submitted revisions to its currently accredited operating procedures for documenting consensus on CRRC-sponsored American National Standards, under which it was last reaccredited in 2019. As the current revisions appear to be substantive in nature, the reaccreditation process is initiated.

To obtain a copy of the revised procedures or to offer comments, please contact: Ms. Sarah Schneider, Deputy Director, Cool Roof Rating Council, 2435 N. Lombard Street, Portland, OR 97217; phone: 503.606.8448, ext. 502; e-mail: [sarah@coolroofs.org](mailto:sarah@coolroofs.org). You may view/download a copy of the revisions during the public review period at the following URL: [www.ansi.org/accredPR](http://www.ansi.org/accredPR). Please submit any public comments on the revised procedures to CRRC by March 16, 2020, with a copy to the ExSC Recording Secretary in ANSI's New York Office ([jthompso@ANSI.org](mailto:jthompso@ANSI.org)).

## Meeting Notices

### ANSI-Accredited U.S. TAG to ISO/TC 229 – Nanotechnologies

The ANSI-Accredited U.S. TAG to ISO/TC 229, Nanotechnologies, will meet on March 25-26, 2020, at the American Chemistry Council in Washington, DC. For additional information or to join the U.S. TAG, please contact Heather Benko ([hbenko@ansi.org](mailto:hbenko@ansi.org)) at ANSI.

## Meeting Notice and Call for Members

### The PLASTICS Industry Association Machinery Safety Technical Committee

The Plastics Industry Association (PLASTICS) will hold the next meeting of the Machinery Safety Technical Committee in conjunction with the 2020 Equipment and Moldmakers Leadership Summit in Louisville, Kentucky. The purpose of the meeting will be to review progress on PLASTICS' Standards five-year workplan and appointing leadership for coming projects. PLASTICS standards meetings are open to all interested parties.

The meeting will take place on Monday, April 27, 2020 at The Galt House Hotel, 140 N Fourth St, Louisville, Kentucky. Note that registration for the summit is not required to attend the Standards session.

For more information and to register for the leadership summit, please see:

<https://www.plasticsindustry.org/event/2020-equipment-and-moldmakers-leadership-summit>.

# Information Concerning

## International Organization for Standardization (ISO)

### Call for U.S. TAG Administrator ISO/TC 295 – *Audit data services*

ANSI directly administers the U.S. TAG Administrator for ISO/TC 295 with the support of the Organization for the Advancement of Structured Information Standards (OASIS). OASIS has advised ANSI to relinquish its role as U.S. TAG Administrator for this committee.

ISO/TC 295 operates under the following scope:

*Standardization in the field of audit data services covers the content specification as well as the collection, pre-processing, management and analysis techniques for the identification, communication, receipt, preparation and use of audit data.*

Note:

- 1. *Audit: an official examination of an entity's financial and financial related records in order to check that they are correct. (Source: Longman Dictionary of Contemporary English 4th Edition, modified company has been replaced by entity to cover government auditees and financial related records has been added.)*
- 2. *The audit data includes data of different areas including public sector budget, financial report, nonfinancial enterprises, tax and social insurance, for the purpose of government audit, external independent audit, internal audit and other regulators.*

*Excluded:*

- 1. *Information system security audit covered by ISO/IEC/JTC 1.*
- 2. *Security evaluation criteria and methodology, techniques and guidelines to address both security and privacy aspects covered by ISO/IEC/JTC 1/SC 27.*
- 3. *Meta-data standards, E-business standards, database language standards covered by ISO/IEC/JTC 1/SC 32.*

Organizations interested in serving as the U.S. TAG Administrator or participating on a U.S. TAG should contact ANSI's ISO Team ([isot@ansi.org](mailto:isot@ansi.org)).





## American National Standards (ANS) – Where to find Procedures, Guidance, Interpretations and More...

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# Public Review Draft

Proposed Addendum ab to Standard 189.1-2017

## Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

Second Public Review Draft (February 2020)  
(Draft Shows Proposed Independent Substantive  
Changes to Previous Public Review Draft)

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BSR/ASHRAE/ICC/USGBC/IES Addendum ab to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017, *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings* - Second Public Review (ISC) Draft.

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## Foreword

This proposal modifies Addendum ab to address concerns that the required view fenestration area may be too small, particularly for large spaces. Additional changes are made to the line of sight requirements intended to make views available from patient beds. Nursing homes and assisted living facilities are added to the applicable space types.

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## Addendum ab to 189.1-2017

**8.3.7 [JO] Exterior Views.** Not less than 50% of the total floor area of the ~~spaces~~spaces listed in Table 8.3.7A shall have a direct line-of-sight, originating at a height of not more than 42 inches (1.0 m) above the floor, to view fenestration, as specified in Table 8.3.7B. The line of sight distance to view fenestration shall not exceed 40 ft. The glazing area shall not be less than 7% of the floor area required to have exterior views.

**Table 8.3.7-A** Exterior View Spaces

• <del>Classrooms</del> <u>Classrooms</u>
• Enclosed offices and open plan offices
• Patient <u>and resident</u> rooms within a healthcare, <u>nursing homes, and assisted living facilities</u>

**Table 8.3.7-B** Required View Fenestration Area

Line of Sight Distance to View Fenestration	Minimum View Fenestration Area
0 to 25 ft (7.6 m)	18 ft <sup>2</sup> (1.7 m <sup>2</sup> )
<u>More than 25 ft (7.6 m) to 40 ft (12 m)</u>	45 ft <sup>2</sup> (4.2 m <sup>2</sup> )

# Public Review Draft

Proposed Addendum ap to Standard 189.1-2017

# Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

First Public Review (February 2020)  
(Draft Shows Proposed Changes to Current Standard)

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## Foreword

This addendum updates the outdoor light pollution requirements in Chapter 5. It removes the outdoor lighting requirements that are provided in ANSI/ASHRAE/IES Standard 90.1 because they are provided in Sections 7.4.6 of this standard. This further allows simplification of the section numbers.

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## Addendum ap to 189.1-2017

*Revise Section 5.3.6 as follows:*

### 5.3.6 Reduction of Light Pollution

~~**5.3.6.1 General.** Exterior lighting systems shall comply with ANSI/ASHRAE/IES Standard 90.1, Sections 9.1, 9.4.1.4, 9.4.2, 9.4.3, and 9.7, and with Sections 5.3.6.2 and 5.3.6.3 of this standard.~~

#### **5.3.6.1 ~~5.3.6.2~~ Backlight and Glare**

- a. ~~All building~~ Building mounted luminaires located less than two mounting heights from any property line shall meet the maximum allowable glare ratings in Table ~~5.3.6.1A-5.3.6.2A~~.
- b. All other luminaires shall meet the maximum allowable backlight and glare ratings in Table ~~5.3.6.1B~~ 5.3.6.2B.

**5.3.6.32 Uplight.** ~~All exterior~~ Exterior lighting shall meet one of the following uplight requirements:

- a. Exterior luminaires shall meet the maximum allowable Uplight Ratings of Table ~~5.3.6.1B-5.3.6.2B~~.
- b. Exterior lighting shall meet the uplight requirements of Table ~~5.3.6.2-5.3.6.3~~.

Exceptions to ~~5.3.6.2-5.3.6.3~~:

1. Lighting in LZ3 and LZ4, solely for uplighting structures, building façades, or landscaping.
2. Lighting in LZ1 and LZ2, solely for uplighting structures, building façades, or landscaping.

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provided the applicable lighting power densities (LPDs) do not exceed 50% of the *lighting power allowances* in ANSI/ASHRAE/IES Standard 90.1, Table 9.4.2-2.

Exceptions to ~~5.3.6.1 and 5.3.6.2~~ ~~5.3.6.2 and 5.3.6.3~~:

1. Specialized signal, directional, and marker lighting associated with transportation.
2. Advertising signage or directional signage.
3. Lighting integral to equipment or instrumentation and installed by its manufacturer.
4. Lighting for theatrical purposes, including performance, stage, film production, and video production.
5. Lighting for athletic playing areas.
6. Lighting that is in use for no more than 60 continuous days and is not reinstalled any sooner than 60 days after being uninstalled.
7. Lighting for industrial production, material handling, transportation *sites*, and associated storage areas.
8. Theme elements in theme/amusement parks.
9. Roadway lighting required by governmental authorities.
10. Lighting classified for and used in hazardous locations as specified in NFPA 70.
11. Lighting for swimming pools and water features.

*Revise numbering of Tables 5.3.6.2A, 5.3.6.2B and 5.3.6.3 to 5.3.6.1A, 5.3.6.1B and 5.3.6.2.*

# Public Review Draft

Proposed Addendum aq to Standard 189.1-2017

# Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

First Public Review (February 2020)  
(Draft Shows Proposed Changes to Current Standard)

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## Foreword

Greenfield sites are a particular concern for Green building, as wildlife habitat loss is a worldwide concern. The addendum revises the definition of native plants, and revises the requirements for maintaining native plants on the site. The addendum provides options for compliance to provide flexibility to the design and construction team, including an option to use non-native plantings that provide similar value to the local food web as native plants.

The proposed requirements replace requirements which were confusing and open to multiple interpretations.

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## Addendum aq to 189.1-2017

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*Revise section 3 Definitions as follows:*

~~***Native plants, native:***~~ ~~*plants that adapted to a given area during a defined time period and are not invasive. In America, the term often refers to plants growing in a region prior to the time of settlement by people of European descent.*~~ Plants recognized as native species by applicable city, county, state, or regional governmental bodies. Alternatively, plant species that occur or occurred without human introduction in, or within 200 miles of the site's US EPA Level III ecoregion.

*Revise section 5.3.3 as follows:*

### 5.3.3. Plants

**5.3.3.1 Invasive Plants.** *Invasive plants shall be removed from the ~~building project~~ site and destroyed or disposed of in a ~~land fill~~ landfill. Invasive plants shall not be planted on the ~~building project~~ site.*

### 5.3.3.2 Greenfield Sites

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a. ~~More than 20% existing native or adapted plants:~~ Where more than 20% of the area of the predevelopment site has existing *native plants* or *adapted plants*, a minimum of 20% of the area of *native plants* or *adapted plants* shall be retained.

b. ~~Less than 20% existing native or adapted plants:~~

1. Where 20% or less of the area of the predevelopment site has existing *native plants* or *adapted plants*, a minimum of 20% of the site shall be developed or retained as vegetated area. Such vegetated areas include bioretention facilities, rain gardens, filter strips, grass swales, vegetated level spreaders, constructed *wetlands*, planters, and open space with plantings.

2. A minimum of 60% of the vegetated area shall consist of *biodiverse plantings* of *native plants* and/or *adapted plants* other than *turfgrass*.

**Exception:** The following areas shall not be included in the calculations: dedicated sports fields, driving ranges, burial grounds, vegetated pavers, and the minimum fire lanes required by the jurisdiction.

Greenfields shall comply with one of the following:

1. Retain existing *native plants* on an area of not less than 10% of the site area;
2. Dedicate not less than 20% of the site area to *biodiverse plantings* of *native plants*;
3. Dedicate not less than 30% of the site area to *biodiverse plantings* other than *turfgrass* provided that the plants are specified by a *registered design professional* to contribute to the local food web.

Vegetated roofing systems, vegetated terrace systems and planters shall be permitted to meet not more than 50% of the requirement for areas of *biodiverse plantings*.

# Public Review Draft

Proposed Addendum at to Standard 189.1-2017

# Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

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## Foreword

This proposal would organize the interior and exterior lighting controls requirements into separate interior and exterior subsections to Section 7.4.6 "Lighting". The new structure would consist of subsections 7.4.6.1 (Lighting Power Allowance), 7.4.6.2 (Interior Lighting Controls), and 7.4.6.3 (Exterior Lighting Controls). This proposal would also require subzone occupancy sensing control in large offices that is modelled after the Section C405.2.1.3 of the 2018 IECC.

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## Addendum at to 189.1-2017

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*Add definition to Section 3.2 as follows:*

### 3.2 Definitions

**general lighting**: see ANSI/ASHRAE/IES Standard 90.1.

*Modify and renumber 7.4.6.2 through 7.4.6.5 as follows:*

**7.4.6 Lighting.** The lighting shall comply with ANSI/ASHRAE/IES Standard 90.1, Section 9, with the following modifications and additions.

...

**7.4.6.2 Interior Lighting Controls.** The interior lighting control requirements in this section are in addition to the control requirements in ANSI/ASHRAE/IES Standard 90.1 Section 9.4.1.1.

**7.4.6.2.1 Occupancy Sensor Controls in Commercial and Industrial Storage Stacks** ~~with Multilevel Switching or Dimming.~~ The lighting in commercial and industrial storage stack areas shall be controlled by an occupant sensor with multilevel switching or dimming system that reduces lighting power a minimum of 50% within 20 minutes of all occupants leaving the stack area.

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**Exception to 7.4.6.2.1:** Storage stack areas illuminated by high-intensity discharge (HID) lighting with an LPD of  $0.8 \text{ W/ft}^2$  ( $8.6 \text{ W/m}^2$ ) or less.

**7.4.6.2.2 7.4.6.3 Automatic Controls for Egress and Security Lighting.** Lighting in any area within a building that is required to be continuously illuminated for reasons of building security or emergency egress shall not exceed  $0.1 \text{ W/ft}^2$  ( $1 \text{ W/m}^2$ ). Additional egress and security lighting shall be allowed, provided it is controlled by an *automatic* control device that turns off the additional lighting.

**7.4.6.2.3 Occupancy Sensing Control in Large Office Spaces.** *General lighting* in office spaces greater than  $250 \text{ ft}^2$  ( $23 \text{ m}^2$ ) shall be controlled by occupancy sensing controls that comply with all of the following:

- a. The occupancy sensing controls shall be configured so that *general lighting* shall be controlled separately in control zones with floor areas not greater than  $600 \text{ ft}^2$  ( $56 \text{ m}^2$ )
- b. Within 20 minutes of the control zone being unoccupied, the occupancy sensing controls shall turn off or uniformly reduce lighting power to no more than 20 percent of full power.
- c. Within 20 minutes of the entire office space being unoccupied, the occupancy sensing controls shall automatically turn off *general lighting* in all control zones in the space.
- d. *General lighting* in each control zone shall be allowed to automatically turn on to full power upon occupancy within the control zone. When occupancy is detected in any control zone in the space, the *general lighting* in other control zones that are unoccupied shall operate at no more than 20 percent of full power.

**7.4.6.3 Exterior Lighting Controls.** This section supersedes ANSI/ASHRAE/IES Standard 90.1, Section 9.4.1.4, for all exterior sign lighting, and lighting serving uncovered parking areas and open areas in outdoor sales lots.

**7.4.6.3.1 7.4.6.4 Controls for Exterior Sign Lighting.** ~~This section supersedes ANSI/ASHRAE/IES Standard 90.1, Section 9.4.1.4, for all exterior sign lighting.~~ All exterior sign lighting, including internally illuminated signs and lighting on externally illuminated signs, shall comply with the requirements of Sections 7.4.6.4.1 or 7.4.6.4.2.

Exceptions to 7.4.6.3.1 7.4.6.4:

1. Sign lighting that is specifically required by a health or life safety statute, ordinance, or regulation.
2. Signs in tunnels.

**7.4.6.3.1.1 7.4.6.4.1** All sign lighting that operates more than one hour per day during *daylight hours* shall include controls to automatically reduce the input power to a maximum of 35% of full power for a period from one hour after sunset to one hour before sunrise.

**Exception to 7.4.6.3.1.1 7.4.6.4.1:** Sign lighting using neon lamps with controls to automatically reduce the input power to a maximum of 70% of full power for a period from one hour after sunset to one hour before sunrise.

**7.4.6.3.1.2 7.4.6.4.2** All other sign lighting shall include the following:

- a. Controls to automatically reduce the input power to a maximum of 50% of full power for a period from midnight or within one hour of the end of business operations, whichever is later, until 6:00 am or business opening, whichever is earlier.
- b. Controls to automatically turn off during *daylight hours*.

**7.4.6.3.2 7.4.6.5 Parking and Outdoor Sales Lighting.** ~~This section supersedes ANSI/ASHRAE/IES Standard 90.1, Section 9.4.1.4, for lighting serving uncovered parking areas and open areas in outdoor sales lots.~~ Outdoor luminaires serving uncovered parking areas and open areas in outdoor sales lots shall be controlled by all of the following:

- a. Luminaires shall be controlled by a device that automatically turns off the luminaire during *daylight hours*.
- b. Luminaires shall be controlled by a timeclock or other control that automatically turns off the luminaire according to a timed schedule.

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- c. For luminaires having a rated input wattage of more than 50 W and where the bottom of the luminaire is mounted 24 ft (7.3 m) or less above the ground, the luminaires shall be controlled by one or more devices that automatically reduce lighting power of each luminaire by a minimum of 50% when there is no activity detected in the controlled zone for a period no longer than 15 minutes. No more than 1500 input watts of lighting power shall be controlled together.

Exceptions to 7.4.6.3.2(c) ~~7.4.6.5 (e)~~:

1. Lighting serving street frontage for vehicle sales lots.
2. Lighting for covered vehicle entrances or exits from buildings or parking structures where required for safety, security, or eye adaptation.

# Public Review Draft

Proposed Addendum au to Standard 189.1-2017

# Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

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(Draft Shows Proposed Changes to Current Standard)

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## Foreword

The US Department of Energy issued new energy conservation standards for many types of commercial and industrial pumps in January 2016 that go into effect on January 27, 2020. The metric used by DOE is the Pump Energy Index (PEI), and the maximum allowed value for all pumps covered by this rule is 1.0. Pumps with PEIs of 1.0 or less comply with the standard. Based on data shown in the DOE final rule, high efficiency pumps with PEI values less than 0.97 are currently available.

ASHRAE Standard 90.1 has incorporated changes based on the DOE updates, including a new Section 10.4.6, a new Table 10.8-6, and additions to the definitions section. Similar changes are now proposed to align Standard 189.1 with the new DOE and 90.1 requirements.

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## Addendum au to 189.1-2017

*Add new definition to Section 3.2 Definitions*

**Pump Energy Index (PEI):** The ratio of the pump energy rating of a given pump type and model divided by the pump energy rating of the same pump type and characteristics minimally compliant with U.S. regulations

*Modify the following sections in Section 7 as follows:*

**7.4.1.1.2 Alternate Renewables Approach: Reduced On-Site Renewable Energy Systems and Higher-Efficiency Equipment.** Building projects complying with this approach shall comply with the applicable equipment efficiency requirements in Normative Appendix B, the water-heating efficiency requirements in Section 7.4.4.1, equipment efficiency requirements in Section 7.4.7.1, ~~and the applicable ENERGY STAR® requirements in Section 7.4.7.3.2, and the applicable pump efficiency requirements in Section 7.4.7.6~~ and shall contain *on-site renewable energy systems* that provide the annual energy production equivalent of not less than 4.0 kBtu/ft<sup>2</sup> (13 kWh/m<sup>2</sup>) multiplied by the horizontal projection of the *gross roof area* in feet squared (meters squared) for single-story buildings, and not less than 7.0 kBtu/ft<sup>2</sup> (22 kWh/m<sup>2</sup>) multiplied by the horizontal projection of the *gross roof area* in feet squared (meters squared) for all other

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buildings. The annual energy production shall be the combined sum of all *on-site renewable energy systems*. For equipment listed in Section 7.4.7.3.2 that are also contained in Normative Appendix B, the installed equipment shall comply by meeting or exceeding both requirements. Documentation shall be provided to the *AHJ* that indicates that the *RECs* associated with the *on-site renewable energy system* will be retained and retired by the *owner*. Where the building *owner* does not have ownership of the *RECs* associated with the *on-site renewable energy system*, the *owner* shall obtain and retire an equal or greater quantity of *RECs*.

...

**7.4.3.1 Minimum Equipment Efficiencies for the Alternate Renewables Approach.** All *building projects* complying with the Alternate Renewables Approach in Section 7.4.1.1.2 shall comply with the applicable equipment efficiency requirements in Normative Appendix B and the applicable ENERGY STAR requirements in Section 7.4.7.3.2. Where equipment efficiency is not defined/listed in Normative Appendix B or in Section 7.4.7.3.2 or in Section 7.4.7.6, the equipment shall meet the minimum efficiency requirements defined/listed in ANSI/ASHRAE/IES Standard 90.1. Specifically, this applies to the following products in ANSI/ASHRAE/IES Standard 90.1:

...

**7.4.7.1 Equipment Efficiency for the Alternate Renewables Approach.** All *building projects* complying with the Alternate Renewables Approach in Section 7.4.1.1.2 shall comply with the applicable equipment efficiency requirements in Normative Appendix B, ~~and~~ the applicable ENERGY STAR requirements in Section 7.4.7.3.2 and the pump efficiency requirements in Section 7.4.7.6.

...

*Add new section in Section 7 as follows:*

**7.4.7.6 Pump Efficiency.** In buildings complying with the Alternate Renewables Approach in Section 7.4.1.1.2, all pumps subject to the requirements of Section 10.4.6 of ASHRAE 90.1 shall have a maximum *Pump Energy Index* no greater than 0.97.

## FOR REFERENCE ONLY

*Note to reviewers: Section 7.4.1.1 is also modified by addendum b and addendum j. Addendum b has been published on the ASHRAE website. Modifications that reflect the combined impact of addendum b, addendum j, and this addendum, but which do not appear explicitly in either, are shown below in strikethrough/underline. This section is not open for review; it is included for reference only.*

**7.4.1.1 Renewable Energy Systems.** The adjusted renewable energy provided to the project shall be equal to or greater than the *gross conditioned and semi-heated floor areas* of the *building project* in feet squared (meters squared) multiplied by the renewable energy requirement from Table 7.4.1.1. For allocations to multiple tenants within a *building project*, the requirements shall be assigned to each tenant based on the total square footage (square meters) of *gross conditioned and semi-heated floor area* of each tenant space.

*Building projects* complying with the Alternate Renewables Approach shall comply with the applicable equipment efficiency requirements in Normative Appendix B, the water-heating efficiency requirements in Section 7.4.4.1, equipment efficiency requirements in Section 7.4.7.1, the applicable ENERGY STAR® requirements in Section 7.4.7.3.2, and the applicable pump efficiency requirements in Section 7.4.7.6. For equipment listed in Section 7.4.7.3.2 that are also contained in Normative Appendix B, the installed equipment shall comply by meeting or exceeding both requirements. ~~Section 7.4.1.1.2~~ The Alternate Renewables Approach shall apply only to *building projects* where the sum of the *gross conditioned and semi-heated floor areas* of the *building project* are less than 25,000 ft<sup>2</sup> (2300 m<sup>2</sup>).

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## Foreword

This is an update to the Building Performance Factors (BPFs) Table 7.5.1 to reflect increases in the energy efficiency requirements in Standard 189.1-2020.

These BPF values are based on a draft energy savings analysis conducted by Pacific Northwest National Laboratory (PNNL) for Standard 189.1-2017 compared to Standard 90.1-2016 using the DOE Commercial Prototype Building Models [https://www.energycodes.gov/development/commercial/prototype\\_models](https://www.energycodes.gov/development/commercial/prototype_models) with enhancements using EnergyPlus software V9.0. The BPFs are calculated using the following formula:

$$\text{BPF}_{189.1-2020} = (1 - \text{energy cost savings \% for regulated energy end uses}) * \text{BPF}_{90.1-2019}$$

The addendum shows changes to the 2017 standard as modified by recently published addendum k, which added the Renewable Fraction column to Table 7.5.1. The table now lists BPF for each building type by climate zone. Note: as currently published, Table 7.5.1 is shown in portrait mode on the page, but it is shown here in landscape mode to accommodate added columns. This change in orientation is not marked as a change.



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## Addendum av to 189.1-2017

*Modify Table 7.5.1 as shown below*

**Table 7.5.1 Building Performance Factors (BPF) and Renewable Fractions (RF)**

Building Type	Building Performance Factor (BPF)	Building Performance Factor (BPF) per Climate Zone																Renewable Fraction (RF)	
		0A & 1A	0B & 1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7		8
Multifamily	0.71	0.61	0.62	0.58	0.58	0.61	0.59	0.50	0.66	0.66	0.67	0.63	0.65	0.66	0.62	0.65	0.61	0.65	0.50
Healthcare/hospital	0.56	0.56	0.55	0.53	0.50	0.53	0.50	0.50	0.51	0.49	0.50	0.53	0.47	0.49	0.54	0.49	0.55	0.55	0.35
Hotel/motel	0.58	0.51	0.49	0.49	0.47	0.49	0.48	0.48	0.48	0.48	0.47	0.45	0.47	0.46	0.46	0.47	0.46	0.47	0.50
Office	0.54	0.48	0.52	0.45	0.51	0.49	0.51	0.42	0.47	0.47	0.45	0.47	0.47	0.44	0.49	0.48	0.46	0.49	0.50
Restaurant	0.59	0.62	0.62	0.58	0.59	0.58	0.60	0.57	0.61	0.56	0.60	0.62	0.59	0.63	0.65	0.62	0.66	0.69	0.10
Retail	0.50	0.48	0.51	0.46	0.52	0.48	0.52	0.48	0.48	0.52	0.51	0.47	0.50	0.51	0.47	0.48	0.46	0.47	0.50
School	0.37	0.37	0.45	0.36	0.41	0.36	0.41	0.39	0.36	0.39	0.38	0.36	0.39	0.36	0.35	0.36	0.35	0.36	0.50
Semiheated Warehouse	0.44	0.36	0.40	0.38	0.40	0.41	0.42	0.40	0.42	0.41	0.44	0.47	0.44	0.45	0.51	0.48	0.54	0.53	0.50
All others	0.54	0.51	0.53	0.46	0.48	0.46	0.50	0.47	0.50	0.48	0.50	0.47	0.47	0.45	0.47	0.47	0.47	0.43	0.50

a. Conditioned warehouses shall use the "All others" category

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# Public Review Draft

Proposed Addendum aw to Standard 189.1-2017

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## Foreword

This addendum removes the pre-existing refrigerant requirements from Section 9.3.3. These requirements were necessary prior to the institution of wide-sweeping regulations prohibiting the manufacture and use of ozone-depleting substances in the U.S. and most other countries. This section has been reserved to be used in the future as more information becomes available about the developing field of refrigerants and their use in green buildings.

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## Addendum aw to 189.1-2017

*Delete the content of Section 9.3.3, Refrigerants, in its entirety and reserve the section for future replacement text.*

**9.3.3 Refrigerants.** ~~RESERVED Chlorofluorocarbon (CFC) based refrigerants in HVAC&R systems shall not be used. Fire suppression systems shall not contain ozone-depleting substances (CFCs, hydrochlorofluorocarbons [HCFCs], or halons).~~

# Public Review Draft

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## Foreword

This addendum adds a reference to Standard 62.1 Section 7, Construction and System Start-up, which includes several requirements that support good indoor air quality. It also deletes some requirements from Section 10 of Standard 189.1 that are covered by the referenced section of Standard 62.1 to avoid duplication and confusion.

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## Addendum ax to 189.1-2017

*Modify Section 10 as follows: Section 10.3.1.6 is deleted in its entirety; Section 10.3.1.5(a) is deleted and replaced; Section 10.3.1.5(b) becomes a new Section 10.3.1.6.*

### 10.3.1 Construction

...

**10.3.1.5 IAQ Construction ~~Management~~ and System Startup.** Ventilation systems shall be constructed and started in compliance with Section 7 of ANSI/ASHRAE Standard 62.1. ~~Develop and implement an IAQ construction management plan to include the following.~~

- a. ~~Air conveyance materials shall be stored and covered so that they remain clean. All filters and controls shall be in place and operational when HVAC systems are operated during building flush out or baseline IAQ monitoring. Except for system startup, testing, balancing, and commissioning, permanent HVAC systems shall not be used during construction.~~

- b. **10.3.1.6 IAQ Flushout and Clearance Testing.** After construction ends, prior to occupancy and with all interior finishes . . . (Remainder of text until 10.3.1.7 is unchanged).

**10.3.1.6 Moisture Control.** The following items to control moisture shall be implemented during construction:

- a. ~~Materials stored on site, or materials installed that are absorptive, shall be protected from moisture damage.~~
- b. ~~Building construction materials that show visual evidence of biological growth due to the presence of moisture shall not be installed on the building project.~~

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## Foreword

This addendum deletes Section 5.3.7.3a, Provisions for Preferred Parking Spaces, as an option for compliance under Site Vehicle Provisions. With the rise in market availability of electric vehicles and charging stations, designated preferred parking for hybrid and low-emission vehicles is difficult to enforce and no longer a viable solution. This addendum also revises and clarifies the requirements for electric vehicle charging infrastructure.

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## Addendum az to 189.1-2017

*Add to the following definition to Section 3.2:*

**electric vehicle supply equipment (EVSE).** The conductors, including the ungrounded, grounded, and equipment grounding conductors, and the Electric Vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle.

**EV ready space:** A designated parking space provided with a 50-ampere, 208/240-volt dedicated branch circuit for Level 2 EVSE servicing electric vehicles. The circuit shall include an overcurrent protective device and shall terminate in a junction box, NEMA 6-50 or NEMA 14-50 receptacle, or an EVSE, and be located in close proximity to the proposed location of the EV parking spaces.

*Revise Section 5.3.7.3 as follows:*

**5.3.7.3 Site Electric Vehicle Provisions Charging Facilities.** Where 20 or more on-site vehicle parking spaces are ~~is~~ provided for ~~a~~ International Building Code (IBC) Occupancy Group A, B, E, F, I, M and S buildings, that has a building occupant load greater than 100, one of the following shall be provided: not less than 4% of the total number of parking spaces or not less than 8% of designated employee only parking spaces shall be EV ready spaces. Where 10 or more on-site vehicle parking spaces are provided for IBC Occupancy Group R-1, R-2 and R-4 buildings, not



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less than 20% of the total number of parking spaces shall be *EV ready spaces*. The required number of *EV ready spaces* shall be rounded up to the next highest whole number.

**Exception:** Parking spaces designated for other than passenger vehicles are permitted to be excluded from the total number of on-site parking spaces.

~~a. **Provisions for preferred parking spaces.** Not less than 5% of the parking *spaces* provided shall be designated as preferred parking for vehicles that meet both the minimum greenhouse gas and air pollution scores as required for USEPA SmartWay designation. Where calculation of the parking *spaces* yields a fraction, such fractions shall be rounded up to the next whole number. Preferred parking *spaces* shall be located on the shortest route of travel from the parking facility to a *building entrance* but shall not take precedence over parking *spaces* that are required to be accessible for individuals with disabilities. Where buildings have multiple entrances with adjacent parking, parking *spaces* shall be dispersed and located near the entrances. Such parking *spaces* shall be provided with signage approved by the *AHJ* that specifies the permitted use.~~

~~b. **Provisions for electric vehicle charging infrastructure.** The *building project* shall comply with one of the following:~~

- ~~1. Two or more electric vehicle charging stations shall be available to the building occupants and shall be located not more than 1/4 mi (400 m) from the *building project*.~~
- ~~2. Electrical raceways shall be installed and extend from one or more of the building's electrical power distribution panels to not less than the number of parking *spaces* specified in Table 5.3.7.3 to facilitate the future installation of vehicle charging stations. Electrical power distribution panels serving such raceways circuits shall be sized to supply the future charging stations based on a design load of not less than 40 amp per required parking *space* at a supply voltage of not less than 208/240 VAC.~~

**Table 5.3.7.3 Minimum Number of EV Ready Spaces Required to Have Raceways**

<b>Total Number of Parking Spaces Provided<sup>a</sup></b>	<b><u>Minimum</u> Number of Spaces Required to Have Raceway <u>EV Ready Spaces</u></b>
1 through 25	1
26 through 50	2
51 through 75	4
76 through 100	5
101 through 150	7
151 through 200	10
201 and over	5% of total

# Public Review Draft

Proposed Addendum ba to Standard 189.1-2017

# Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

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(Draft Shows Proposed Changes to Current Standard)

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## Foreword

This addendum revises the thermostat section to include an option to use EnergyStar requirements.

*[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.]*

## Addendum ba to 189.1-2017

*Revise Section 7 as follows:*

**7.4.7.4 Programmable Thermostats.** *Residential* programmable thermostats shall meet the requirements of NEMA Standards Publication DC 3, Annex A, “Energy-Efficiency Requirements for Programmable Thermostats:” or the requirements of the ENERGY STAR program for Connected Thermostats.

*Add new Section 11 Normative Reference under the EPA section:*

United States Environmental Protection Agency (USEPA) Ariel Rios Building

1200 Pennsylvania Avenue, NW Washington, DC 20460, United States 1-919-541-0800; [www.epa.gov](http://www.epa.gov) ENERGY STAR ® 1-888-782-7937

WaterSense 1-866-987-7367 and 1-202-564-2660

...

Version 1.0, December 23, 2016

ENERGY STAR Program Requirements for Connected Thermostat Products

7.4.7.4

# Public Review Draft

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## Foreword

The addendum clarifies that minimum compliance with Standard 90.1-2019 is required without consideration of on-site or off-site renewable energy.

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## Addendum bb to 189.1-2017

*Modify Section 7.5.1 as shown:*

**7.5.1 Annual Energy Cost.** The *proposed building performance* cost index (PCI) ~~with consideration of renewables~~ shall be calculated in accordance with ANSI/ASHRAE/IES Standard 90.1, Normative Appendix G, and be equal to or less than the Performance Cost Target, as determined from the following equation:

$$PCI_{target} = \frac{BBUEC + (BBREC \times BPF) \times (1 - RF)}{BBUEC + BBREC}$$

where

$PCI_{target}$  = target PCI required for achieving compliance with the standard, unitless

BBUEC = the component of *baseline building performance* that is due to *unregulated energy use*, \$

BBREC = the component of *baseline building performance* that is due to *regulated energy use*, or *baseline building performance* minus BBUEC, \$

BPF = building performance factor taken from Table 7.5.2A, unitless

RF = renewable energy production fraction from Table 7.5.1, unitless

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~~The proposed building PCI, without consideration of renewables, shall comply with the requirements of ASHRAE/IES Standard 90.1, Section 4.2.1.1.~~

*On-site renewable energy systems* in the *proposed design* shall be calculated using the procedures in Normative Appendix C. For mixed-use buildings, the building performance factor (BPF) shall be determined by weighting each building type by floor area. A *building project* served in whole or in part by a *district energy plant* shall follow the modeling requirements contained in Normative Appendix C, Section C1.3, in order to comply with this section.

**7.5.1.1 Compliance with ANSI/ASHRAE/IES Standard 90.1 without renewables.** The proposed building PCI shall comply with the requirements of ANSI/ASHRAE/IES Standard 90.1, Section 4.2.1.1. The energy cost credits from on-site renewable energy production shall not be subtracted from the *proposed design energy costs* for the purposes of this section.

# Public Review Draft

Proposed Addendum be to Standard 189.1-2017

# Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

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## Foreword

This addendum updates the lighting quality section to include new requirements for dimming controls, color rendition, and flicker. It also clarifies the applicability of the requirements and adds relevant normative references.

*[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.]*

## Addendum be to 189.1-2017

*Add the following definition to Section 3.2:*

### 3.2 Definitions

**general lighting:** see ANSI/ASHRAE/IES Standard 90.1.

*Revise Section 8.3.5 as follows:*

**~~8.3.5 Lighting Quality.~~** ~~The interior lighting and lighting controls shall be installed to meet the requirements of Sections 8.3.5.1 and 8.3.5.2.~~

**8.3.5 Indoor Lighting Quality.** Lighting in spaces regularly occupied for more than an hour per day by at least one person shall comply with all the following requirements:

**8.3.5.1 Enclosed Office Spaces.** Lighting for at least 90% of enclosed office spaces with less than 250 ft<sup>2</sup> (23.3 m<sup>2</sup>) of floor area shall comply with at least one of the following:

- ~~a. Provide multilevel lighting control.~~
- ~~b. Provide bilevel lighting control and separate task lighting.~~

**8.3.5.1 Controllability.** General lighting shall be continuously dimmable to 10% or less of full light output and be controlled by a local control capable of manual dimming. Forward phase-cut dimmers shall comply with NEMA SSL 7A Section 3.

**Exception.** General lighting in the following spaces: manufacturing areas, workshops, laboratories, kitchens, loading docks and storage spaces.



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**8.3.5.2 Lighting Control Labelling for Multi-occupant Spaces.** *General lighting* ~~Lighting~~ for conference rooms, meeting rooms, multipurpose rooms, gymnasiums, auditoriums, ballrooms, cafeterias, *classrooms*, and other training or lecture rooms shall ~~be provided with multilevel lighting control.~~ have ~~Lighting settings of or the lighting controlled by~~ each manual control shall be labeled at the control devices. The lighting in gymnasiums, auditoriums, ballrooms, and cafeterias shall also consist of at least two separately controlled groups of luminaires.

**8.3.5.3 Color Rendition.** At least 95% of lighting power of nominally white lighting within each *enclosed space* shall be provided by luminaires that meet the following criteria at full light output in accordance with P2 and F3 in Annex E of IES-TM-30:

- $R_f$  of at least 85.
- $R_{f,h1}$  of at least 85.
- $R_g$  of at least 92, and
- $R_{cs,h1}$  of at least -7% but no greater than 19%.

Nominally white lighting is lighting which has chromaticity within the basic or extended nominal color correlated temperature (CCT) specifications of ANSI C78.377.

Where a lighting system is capable of changing its spectrum, it shall be capable of meeting the color rendition requirements within each nominal CCT of 2700 K, 3500 K, 4000 K, and 5000 K, as defined in ANSI C78.377, that the system is capable of delivering.

Lighting systems where spectrum changes through dimming alone shall meet the color rendition requirements at full light output.

**8.3.5.4 Flicker.** All *general lighting* shall comply with 8.3.5.4.1 or 8.3.5.4.2.

**8.3.5.4.1 Percent Amplitude Modulation.** *General lighting* shall be tested and calculated in accordance with CA Title 24, part 6, Appendix JA10. Non-dimmable sources shall be tested at full light output. Dimmable sources shall be tested at full light output and at a dimmed state that is the greater of 20% of full light output and minimum light output.

All lamps and light sources shall have percent amplitude modulation no greater than the values listed in Table 8.3.5.4.1 for all listed cut-off frequencies at full light output. Dimmable lamps and dimmable light sources shall also comply with the requirements in Table 8.3.5.4.1 at the dimmed state.

**Table 8.3.5.4.1** Maximum Percent Modulation for light sources tested in accordance with California Title 24, JA10.

	<u>Integrated lamps with the following ANSI standard base types: E26, E26d, E17, E11, E12, G4, G9, GU10, GU24, GU5.3, or GX5.3</u>		<u>All other lamps and light sources</u>	
<u>T-24 JA10 Cut-off frequency (Hz)</u>	<u>Amplitude Modulation at full output</u>	<u>Amplitude Modulation at greater of 20% and min output</u>	<u>Amplitude Modulation at full output</u>	<u>Amplitude Modulation at greater of 20% and min output</u>
40	1.0%	1.0%	1.0%	1.0%
90	2.3%	3.2%	1.6%	1.6%
200	16.0%	22.4%	9.6%	9.6%
400	32.0%	32.0%	24.0%	24.0%
1000	80.0%	80.0%	56.0%	56.0%

**8.3.5.4.2 Stroboscopic Visibility Measure (SVM) and Short-Term Flicker Indicator (Pst).** The Stroboscopic Visibility Measure (SVM) and Short-Term Flicker Indicator (Pst) of *general lighting* shall be tested and calculated in accordance with NEMA 77. Non-dimmable sources shall be tested at full light output. Dimmable sources shall be tested at full light output and at a dimmed state that is the greater of 20% of full light output and minimum light output.

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All light sources shall have a Stroboscopic Visibility Measure (SVM) of no greater than 0.4 and a Short-Term Flicker Indicator (Pst) of no greater than 1.0 at all required test conditions.

*Add references to Section 11 as follows:*

## 11. NORMATIVE REFERENCES

Section numbers indicate where the reference occurs in this document.

Reference	Title	Section
<b>American National Standards Institute (ANSI)</b> 25 West 43rd Street New York, NY 20036, United States 1-212-642-4900; <a href="http://www.ansi.org">www.ansi.org</a>  <u>ANSI C78.377-2017</u>	<u>American National Standard for Electric Lamps—Specifications for the Chromaticity of Solid State Lighting (SSL) Products</u>	<u>8.3.5.3</u>
<b>California Energy Commission</b> <u>1516 Ninth St.</u> <u>Sacramento, CA 95814, United States</u> <u>1-916-654-5106, <a href="http://www.energy.ca.gov">www.energy.ca.gov</a></u>  <u>2019 Title 24 Part 6, JA 10</u>	<u>Reference Appendices for the 2019 Building Energy Efficiency Standards. Joint Appendix JA10</u> <u>Test Method for Measuring Flicker of Lighting Systems and Reporting Requirements</u>	<u>8.3.5.4</u>
<b>National Electrical Manufacturers Association (NEMA)</b> 1300 North 17th Street, Suite 900 Rosslyn, VA 22209, United States 1-703-841-3200; <a href="http://www.nema.org">www.nema.org</a>  <u>NEMA SSL7A-2015</u>  <u>NEMA 77-2017</u>	<u>Phase-Cut Dimming for Solid State Lighting – Basic Compatibility</u>  <u>Standard for Temporal Light Artifacts: Test Methods and Guidance for Acceptance Criteria</u>	<u>8.3.5.1</u>  <u>8.3.5.4</u>
Illuminating Engineering Society 120 Wall Street, Floor 17 New York, NY 10005-4001, United States 1-212-248-5017, <a href="http://www.ies.org">www.ies.org</a>  IDA/IES Model Lighting Ordinance <u>TM-30-2018</u>	Model Lighting Ordinance (MLO) <u>IES Method for Evaluating Light Source Color Rendition</u>	5.3.6 <u>8.3.5.3</u>

# Public Review Draft

Proposed Addendum bh to Standard 189.1-2017

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## Foreword

This addendum updates the outdoor light pollution requirements in Chapter 5. It removes the outdoor lighting requirements that are provided in ANSI/ASHRAE/IES Standard 90.1, which already appear in Sections 7.4.6 of this standard, and simplifies section numbering accordingly. It also combines Tables 5.3.6.2A and B into one Table 5.3.5.1 in order to reduce confusion about how the requirements are integrated.

Furthermore, this update clarifies that there are no backlight requirements for building mounted luminaires, as shown in a new row added to Table 5.3.6.1. Note that these changes are editorial and do not affect the stringency of the BUG ratings.

One of the existing options for uplight compliance that appeared in Section 5.3.6.3(b) and Table 5.3.6.3 is also being removed because it does not align with the IDA/IES Model Lighting Ordinance (MLO) and is based on a metric that is generally going out of use.

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## Addendum bh to 189.1-2017

*Revise Section 5.3.6 as follows:*

### 5.3.6 Reduction of Light Pollution

**5.3.6.1 General.** ~~Exterior lighting systems shall comply with ANSI/ASHRAE/IES Standard 90.1, Sections 9.1, 9.4.1.4, 9.4.2, 9.4.3, and 9.7, and with Sections 5.3.6.2 and 5.3.6.3 of this standard.~~

### 5.3.6.2 Backlight and Glare

- a. ~~All building-mounted luminaires located less than two mounting heights from any property line shall meet the maximum allowable glare ratings in Table 5.3.6.2A.~~
- b. ~~All other luminaires shall meet the maximum allowable backlight and glare ratings in Table 5.3.6.2B.~~

**5.3.6.3 Uplight.** ~~All exterior lighting shall meet one of the following uplight requirements:~~

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- ~~a. Exterior luminaires shall meet the maximum allowable Uplight Ratings of Table 5.3.6.2B.~~
- ~~b. Exterior lighting shall meet the uplight requirements of Table 5.3.6.3.~~

**5.3.6.1 Backlight Uplight, Glare (BUG) ratings.** Exterior luminaire Backlight, Uplight, and Glare (BUG) Ratings shall be in accordance with IES TM-15. Luminaire mounting heights shall be determined as the distance between the lowest point of a luminaire and the ground. All exterior lighting shall comply with items (a) through (c).

- a. **Backlight.** Building mounted exterior lighting with backlight oriented towards the building is not required (NR) to have a maximum Backlight Rating. All other exterior lighting, not building mounted and building mounted where backlight is not oriented towards the building, shall have a Backlight Rating that is no greater than the maximum Backlighting Rating value in Table 5.3.6.1 that is a function of the horizontal distance between the luminaire and closest property line in multiples of luminaire mounting height and the *Lighting Zone*. Luminaires not building mounted and located within 2 mounting heights of the nearest property line, shall be oriented so the backlight portion of light output is oriented perpendicular towards the closest property line.
- b. **Uplight.** Exterior luminaires shall have an Uplight Rating that is no greater than the maximum Uplight Rating value in Table 5.3.6.1 for the *Lighting Zone*.

**Exceptions to 5.3.6.1(b) ~~5.3.6.3~~:**

- 1. Lighting in *LZ3* and *LZ4*, solely for uplighting structures, building façades, or landscaping.
- 2. Lighting in *LZ1* and *LZ2*, solely for uplighting structures, building façades, or landscaping, provided the applicable lighting power densities (LPDs) do not exceed 50% of the *lighting power allowances* in ANSI/ASHRAE/IES Standard 90.1, Table 9.4.2-2.
- c. **Glare.** Building mounted exterior lighting with forward light oriented towards the building is not required (NR) to have a maximum Glare Rating. All other building mounted lighting shall have a Glare Rating that is no greater than the maximum Glare Rating value in Table 5.3.6.1 as a function of the horizontal distance between the luminaire and closest property line in multiples of luminaire mounting height and the *Lighting Zone*. All exterior lighting, not building mounted shall have a Glare Rating that is no greater than the maximum Glare Rating value in Table 5.3.6.1 for the *Lighting Zone*.

**Exceptions to 5.3.6.1 ~~5.3.6.2~~ and ~~5.3.6.3~~:**

- 1. Specialized signal, directional, and marker lighting associated with transportation.
- 2. Advertising signage or directional signage.
- 3. Lighting integral to equipment or instrumentation and installed by its manufacturer.
- 4. Lighting for theatrical purposes, including performance, stage, film production, and video production.
- 5. Lighting for athletic playing areas.
- 6. Lighting that is in use for no more than 60 continuous days and is not reinstalled any sooner than 60 days after being uninstalled.
- 7. Lighting for industrial production, material handling, transportation *sites*, and associated storage areas.
- 8. Theme elements in theme/amusement parks.
- 9. Roadway lighting required by governmental authorities.

BSR/ASHRAE/ICC/USGBC/IES Addendum bh to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017, *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings* First Public Review Draft.

10. Lighting classified for and used in hazardous locations as specified in NFPA 70.
11. Lighting for swimming pools and water features.

**Combine Tables 5.3.6.2A, 5.3.6.2B into renumbered Table 5.3.6.1 and delete Table 5.3.6.3**

**Table 5.3.6.2A Maximum Allowable Glare Ratings for Building-Mounted Luminaires within Two Mounting Heights of Any Property Line<sup>a,b</sup>**

Distance in Mounting Heights to Nearest Property Line	LZ0	LZ1	LZ2	LZ3	LZ4
$\geq 1$ and $< 2$	G0	G0	G1	G1	G2
$\geq 0.5$ and $< 1$	G0	G0	G0	G1	G1
$< 0.5$	G0	G0	G0	G0	G1

a. For property lines that abut public walkways, bikeways, plazas, and parking lots, the property line may be considered to be 5 ft (1.5 m) beyond the actual property line for the purpose of determining compliance with this section. For property lines that abut public roadways and public transit corridors, the property line may be considered to be the centerline of the public roadway or public transit corridor for the purpose of determining compliance with this section.

b. Backlight, uplight, and glare ratings are defined based on specific lumen limits per IES TM-15 Addendum A.

**Table 5.3.6.2B 5.3.6.1 Maximum Allowable Backlight, Uplight, and Glare (BUG) Ratings<sup>a,b,c,d</sup>**

Lighting Zone	LZ0	LZ1	LZ2	LZ3	LZ4
<b><u>Allowed Backlight Rating – Building Mounted and Backlight Oriented Towards Building<sup>c</sup></u></b>	<u>NR</u>	<u>NR</u>	<u>NR</u>	<u>NR</u>	<u>NR</u>
<b>Allowed Backlight Rating – All Other Luminaires</b>					
>2 mounting heights from property line	B1	B3	B4	B5	B5
$\geq 1$ to 2 mounting heights from property line	B1	B2	B3	B4	B4
0.5 to 1 mounting height to property line	B0	B1	B2	B3	B3
<0.5 mounting height to property line	B0	B0	B0	B1	B2
<b><u>Allowed Uplight Rating – All Exterior Lighting</u></b>	U0	U1	U2	U3	U4
<b><u>Allowed Glare Rating – Building Mounted and Forward Light Oriented Towards Building<sup>c</sup></u></b>	<u>NR</u>	<u>NR</u>	<u>NR</u>	<u>NR</u>	<u>NR</u>
<b><u>Allowed Glare Rating – All Other Building Mounted Lighting</u></b>					
>2 mounting heights from property line	<u>G0</u>	<u>G1</u>	<u>G2</u>	<u>G3</u>	<u>G4</u>
>1 to 2 mounting heights from property line	<u>G0</u>	<u>G0</u>	<u>G1</u>	<u>G1</u>	<u>G2</u>
0.5 to 1 mounting height to property line	<u>G0</u>	<u>G0</u>	<u>G0</u>	<u>G1</u>	<u>G1</u>
<0.5 mounting height to property line	<u>G0</u>	<u>G0</u>	<u>G0</u>	<u>G0</u>	<u>G1</u>
<b><u>Allowed Glare Rating – All Other Luminaires</u></b>	G0	G1	G2	G3	G4

a. Except where installed on a building surface, luminaires that are located at a distance of two times the mounting height of the luminaire or less from a property line shall have the backlight of the luminaire aimed toward and perpendicular to the nearest property line. Backlight is that part of the luminaire's lumen output that was used to determine the backlight rating in its final angular position.

b. For property lines that abut public walkways, bikeways, plazas, and parking lots, the property line may be considered to be 5 ft (1.5 m) beyond the actual property line for the purpose of determining compliance with this section. For property lines that abut public roadways and public transit corridors, the property line may be considered to be the centerline of the public roadway or public transit corridor for the purpose of determining compliance with this section.

c. If the luminaire is installed in other than the intended manner, or is an adjustable luminaire for which the aiming is specified, the rating shall be determined by the actual photometric geometry in the aimed orientation.

d. Backlight, uplight, and glare ratings are defined based on specific lumen limits per IES TM-15 Addendum A.

e. NR = not required

BSR/ASHRAE/ICC/USGBC/IES Addendum bh to ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017, *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings* First Public Review Draft.

**Table 5.3.6.3 Maximum Allowable Percentage of Uplight**

-	<del>LZ0</del>	<del>LZ1</del>	<del>LZ2</del>	<del>LZ3</del>	<del>LZ4</del>
Percentage of total exterior fixture lumens allowed to be emitted above 90 degrees or higher from nadir (straight down)	0%	0%	1%	2%	5%

ASME RAM-1-20XX - Reliability, Availability, and Maintainability of Equipment  
and Systems in Power Plants  
Record #18-1061

**4 DEFINITIONS**

*criticality*: the relative importance of tasks, equipment, systems, or components and their contributions to the mission. ~~attributes that range from physical materials and hardware to design functions.~~

TENTATIVE  
SUBJECT TO REVISION



## BOMA Z65.2 Proposed Changes

### **Inter-Building Amenity Area**

Removal of the term “Prayer rooms” from the list of Inter-Building Amenity Areas examples in Section 4.1

### **Global Summary of Areas Spreadsheet**

Highlight Column D and Column P and add a note to the spreadsheet

***Single Occupant Rentable Area = Rentable Exclusions + Multi-Occupant Rentable Area ( $\Sigma D = \Sigma E + \Sigma P$ )***

### **Overhang Area**

Add the following language to Section 2.2 Space Classifications, Rentable Exclusion 1, Overhang Area, after b) Permanent Floor

***Overhang Area may be proportionately allocated to Occupants using Building Service Area or Inter-Building Service Area if agreed by all parties in the lease. When using this methodology, it must be noted in the Global Summary of Areas and in all associated lease documents that the Overhang Area was classified as either Building Service Area or Inter-Building Service Area.***

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[Note – the recommended changes to the standard which include the current text of the relevant section(s) indicate deletions by use of ~~strikeout~~ and additions by **gray highlighting**. Rationale statements are in *italics* and only used to add clarity; these statements will NOT be in the finished publication.]

## NSF International Standard for Dietary Supplements —

### Dietary supplements

- 
- 
- 

#### 5 Product requirements

- 
- 
- 

##### 5.3.4.3 Ephedrine alkaloids

Finished products that contain *Ephedra* spp. that are marketed in any country that regulates a maximum level of ephedrine alkaloids shall be confirmed to contain no more than the allowed amount of ephedrine alkaloids at a limit of detection of 0.1 ppm.

Notwithstanding the prior paragraph, this requirement does apply to ingredients and finished products that consist of or are derived from *E. nevadensis* or *E. viridis* that are not manufactured to concentrate any naturally occurring ephedrine alkaloids. Examples of such exempt ingredients and products include tablets or capsules containing ground raw material from or simple tinctures of these species.

Compliance with this Section shall be verified in accordance with Section 7.4.

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- 

***Rationale: Add recognition of certain botanical species that are prohibited from use in dietary supplements which is proposed in Section 5.3.4.3.***

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[Note – the recommended changes to the standard which include the current text of the relevant section(s) indicate deletions by use of ~~strikeout~~ and additions by **gray highlighting**. Rationale statements are in *italics* and only used to add clarity; these statements will NOT be in the finished publication.]

## NSF/ANSI Standard For Wastewater Technology –

### Onsite residential and commercial water reuse treatment systems

- 
- 
- 

#### 8.1.2.1.2 Greywater challenge water: Systems treating laundry source water

Prepare the challenge water according to the following formula:

Wastewater components <sup>1</sup>	Amount/100 L
liquid laundry detergent (2×)	40 mL
A2 - Fine Test dust, meeting ISO 12103-1	10 g
secondary effluent	2 L
raw influent screened to ≤ 1mm	1 L
liquid laundry fabric softener	21 mL
Na <sub>2</sub> SO <sub>4</sub>	4 g
NaHCO <sub>3</sub>	2 g
Na <sub>3</sub> PO <sub>4</sub>	4 g
urea	as needed to bring influent TKN within the specified range
NaOH	as needed to adjust pH
HCl	as needed to adjust pH
<sup>1</sup> See Annex C for example products.	

The amount of individual wastewater components are recommendations. If the required range for the 30-day average concentration of individual parameters are not met using the recommended volumes, then the volume of wastewater components can be adjusted to achieve the required 30-day average concentrations. All necessary adjustments to the ingredient volumes shall be reported in the final report.

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Revision to NSF/ANSI 350-201X  
Issue 45 Revision 2 (January 2020)

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The laundry water delivered to the system shall be as follows:

Parameter	Required range	Individual sample maximum
TSS	50 – 100 mg/L	—
BOD <sub>5</sub>	220 – 370 mg/L	—
temperature	25 – 35 °C	—
pH	6.0 – 8.5	—
turbidity	50 – 90 NTU	—
total phosphorous – P	< 2 mg/L	—
total Kjeldahl nitrogen – N	4.0 – 6.0 mg/L	—
COD	<del>300 – 500 mg/L</del> 300 - 740 mg/L	—
total coliforms <sup>1</sup> (30-d geometric mean)	10 <sup>3</sup> – 10 <sup>7</sup> cfu/100 mL	10 <sup>9</sup> cfu/100 mL
<i>E. coli</i> <sup>1</sup> (30-day geometric mean)	10 <sup>2</sup> – 10 <sup>6</sup> cfu/100 mL	10 <sup>7</sup> cfu/100 mL
<sup>1</sup> See Section 8.6.1.2.		

#### 8.1.2.1.3 Greywater challenge water: Systems treating bathing and laundry source waters combined

Each 100 L challenge water shall be prepared using 53 L of Section 8.1.2.1.1 and 47 L of Section 8.1.2.1.2. The greywater delivered to the system shall be as follows:

Parameter	Required range	Individual sample maximum
TSS	50 – 160 mg/L	—
BOD <sub>5</sub>	130 – 210 mg/L	—
temperature	25 – 35 °C	—
pH	6.0 – 8.5	—
turbidity	30 – 100 NTU	—
total phosphorous – P	1.0 – 3.0 mg/L	—
total Kjeldahl nitrogen – N	3.0 – 5.0 mg/L	—
COD	<del>250 – 400 mg/L</del> 230 - 420 mg/L	—
total coliforms <sup>1</sup> (30-day geometric mean)	10 <sup>3</sup> – 10 <sup>7</sup> cfu/100 mL	10 <sup>9</sup> cfu/100 mL
<i>E. coli</i> <sup>1</sup> (30-day geometric mean)	10 <sup>2</sup> – 10 <sup>6</sup> cfu/100 mL	10 <sup>7</sup> cfu/100 mL
<sup>1</sup> See Section 8.1.2.		

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*Rationale: Revise the chemical oxygen demand (COD) concentration level in greywater challenge water for systems treating laundry source water in Section 8.1.2.1.2.*

**BSR/UL 60079-0, Standard for Safety for *Explosive Atmospheres - Part 0: General Requirements***

**1. Revisions for Alignment with 2020 NEC for Clause 1DV, Table 4ADV and 29.4DV.**

**PROPOSALS**

**1 Scope**

**1DV DR Modification of Clause 1, first paragraph to replace with the following:**

This part of IEC 60079 document specifies the general requirements for construction, testing and marking of Ex Equipment and Ex Components intended for use in explosive atmospheres. Explosive atmospheres are identified by the National Electrical Code®, ANSI/NFPA 70 as hazardous (classified) locations and include the following specified locations:

- Class I, Zone 0
- Class I, Zone 1
- Class I, Zone 2
- Zone 20
- Zone 21
- Zone 22

Where references are made to IEC 60079 standards, US adoptions of IEC, IEC/IEEE, ISO, and ISO/IEC standards, the referenced requirements found in these standards shall apply as modified by any applicable US National Differences for that standard (see clause 2).

**Table 4ADV D2 Modification of Table 4ADV to replace with the following:**

**Table 4ADV Relationship of EPLs to NEC Zones**

<u>EPL designation</u>	<u>NEC zone classification</u>
<u>Ga</u>	<u>Class I, Zone 0</u>
<u>Gb</u>	<u>Class I, Zone 1</u>
<u>Gc</u>	<u>Class I, Zone 2</u>
	<u>Zone 20</u>
<u>Db</u>	<u>Zone 21</u>
<u>Dc</u>	<u>Zone 22</u>
<u>Ma</u>	<u>Not applicable Not applicable</u>
<u>Mb</u>	<u>Not applicable Not applicable</u>

**29.4DV DR Modification of Clause 29.4, US-1 item to replace with the following:**

**The Ex marking shall include the following:**

**US-1) Class I or CL I (equipment shall be permitted to omit the “Class I” or CL I marking):**

**US-2) the applicable Zone marking – i.e. Zone 0, Zone 1, or Zone 2; or Zn 0, Zn 1, or Zn 2**

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## **BSR/UL 80079-20-2, Standard for Safety for *Explosive Atmospheres - Part 20-2: Material Characteristics – Combustible Dusts Test Methods***

*1. This proposal provides revisions to the proposal document dated December 6, 2019 for the Adoption of ISO/IEC 80079-20-2 Explosive Atmospheres - Part 20-2: Material Characteristics – Combustible Dusts Test Methods (first edition issued by ISO/IEC February 2016) as a new UL ISO/IEC-based UL Standard, UL 80079-20-2 to the applicable requirements per comments received.*

### **PROPOSAL**

#### **1 Scope**

**1DV DR Modification of Clause 1 to replace with the following:**

This standard part of ISO/IEC 80079 describes the test methods for the identification of combustible dust and combustible dust layers in order to permit classification of areas where such materials exist for the purpose of the proper selection and installation of electrical and mechanical equipment for use in the presence of combustible dust in accordance with the National Electrical Code, NFPA 70.

The standard atmospheric conditions for determination of characteristics of combustible dusts are:

- temperature  $-20\text{ }^{\circ}\text{C}$  to  $+60\text{ }^{\circ}\text{C}$ ,
- pressure 80 kPa (0,8 bar) to 110 kPa (1,1 bar) and
- air with normal oxygen content, typically 21 % v/v.

The test methods defined do not apply to:

- recognized explosives, propellants (e.g. gunpowder, dynamite), or substances or mixtures of substances which may, under some circumstances, behave in a similar manner or
- dusts of explosives and propellants that do not require atmospheric oxygen for combustion, or to pyrophoric substances.

Where references are made to US adoptions of IEC, IEC/IEEE, ISO, and ISO/IEC standards, the referenced requirements found in these standards shall apply as modified by any applicable US National Differences for that standard (see clause 2).

#### **2 Normative references**

**2DV DR Modification of Clause 2 to replace with the following:**

**None.**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

**NFPA 70, National Electrical Code (NEC)**



## BSR/UL 4600, Standard for Safety for the Evaluation of Autonomous Products

### 1. Proposed First Edition of the Standard for Safety for the Evaluation of Autonomous Products, UL 4600

#### PROPOSAL

1.2.2 The approach taken in this standard (UL 4600) is to require a ~~goal~~claim-based safety case that encompasses essentially the entirety of the material necessary for safety assurance. The safety case includes a structured set of claims, argument, and evidence supporting the proposition that an item (a vehicle plus all other support contributing to safety) is acceptably safe for deployment. In support of that goal, UL 4600 assessments emphasize ensuring that the safety case is reasonably complete and well formed. In particular, UL 4600 provides guidance to improve consistency and completeness of the safety case. To this end, some best-practice process activities and granular work products are specifically required (e.g., creation of a hazard log). However, no specific overall design process is mandated, nor are there mandates for specific methods used to create the majority of work products (e.g., a V-style development process is not required; any reasonable approach used to create a list of hazards can be acceptable).

2.1.5 The requirements of this standard are considered to be at a minimum appropriate necessary, but possibly not sufficient, level of completeness and rigor ~~necessary~~ to create an acceptably well-formed and acceptably complete item safety case. In particular, prompt element lists are considered non-exhaustive, with an expectation that design teams will include additional items as relevant to the item and its operational design domain.

*Note from STP Project Manager – Please note the numbering associated with examples provided as 2.2.3, 2.2.4, 2.3.2, and 2.3.3 will be removed in the final published requirements. An example of this change is shown below for 2.2.3. The remainder of the changes will not be shown here due to space constraints.*

~~2.2.3~~ **EXAMPLE:** Unpaved roads without lane markings are excluded from the ODD. The safety case generally argues that geo-fencing and map creation will exclude all unpaved roads. It is further argued that this exclusion encompasses quickly identifying roads undergoing repaving projects that are temporarily ~~unpaved-unmarked~~ but still carrying traffic.

2.3.4 There are a number of additional topics out of scope. Reference to these topics should be made where relevant to the safety case, but specifics such as prompt elements to provide technical depth are not included in this standard:

**(NOTE – Paragraph 2.3.4 not shown in its entirety)**

3.2.1 The following references included in this standard are for information only. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Def Stan 00-56, Safety Management Requirements for Defence Systems  
(NOTE – Paragraph 3.2.1 not shown in its entirety)

4.1.1 Commonly used constructions of this standard affect the safety case as follows. All elements are normative except “EXAMPLE,” and “REFERENCE” statements as well as any other content that is explicitly stated to be informative. (See Table 4.1 below for a summary of key safety case deviation explanations.)

- a) **Numbered clauses** (starting at 5.1.1) are generally stated as “shall” conformance obligations. These are intended to be general statements, with supporting normative prompt elements providing further detail. Each clause is specifically addressed in the safety case with the exception of conformance assessment process clauses in Section 17 that deal with activities performed upon the safety case itself. An important part of navigability of the safety case is a capability to identify the portion(s) of the safety case that support fulfillment of each clause. The scope of all clauses is the safety related portion of the item unless otherwise stated.
- b) **MANDATORY prompt elements:** Addressed by the safety case. Safety case deviations not permitted. Any safety case deviation results in a non-conformance.

**EXAMPLE:** “Identify hazards” is mandatory – it must be done.

**EXAMPLE:** A team attempts to argue that MANDATORY prompt element X does not apply to their item. This is an invalid attempt at a safety case deviation.

**NOTE:** In some cases, a MANDATORY prompt element refers to consideration of a different clause in a hierarchical manner. That should be interpreted as a mandatory inclusion of the associated higher-level claim in a safety argument, but not mandatory inclusion of all the non-mandatory prompt elements of the clause being referred to. In particular, such hierarchical references are not intended to override the safety case deviation rules.

**EXAMPLE:** MANDATORY prompt element X states that section Y is addressed by the safety case. Section Y has a HIGHLY RECOMMENDED prompt element Z. The net requirement is that satisfaction of all clauses in Section Y must be addressed by the safety case, but a safety case deviation of prompt element Z is still permitted in accordance with its HIGHLY RECOMMENDED categorization.

(NOTE – Paragraph 4.1.1 not shown in its entirety)

4.1.2 Summary of safety case deviation approach~~es~~ for elements of different types ~~of requirements~~ is shown in Table 4.1:

**Table 4.1**  
**Safety Case Deviation Approach**  
 (NOTE – Table 4.1 not shown in its entirety)

<b>HIGHLY RECOMMENDED</b>	<p>Safety case deviations permitted with an <del>technical-acceptable</del> rationale. Impact analysis and lifecycle tracking monitor the possibility of a change of applicability status. All safety case deviations recorded in safety case with justification.</p>
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4.1.3 Lists that support a particular clause, such as a list of MANDATORY or REQUIRED items, are interpreted in the following manner:

(NOTE – items a – f of paragraph 4.1.3 not shown)

g) “At least one of” phrasing contains a sub-list of alternatives. Only one alternative within the list need be addressed in the safety case, although others might additionally be addressed if desired. This is true even if the “at least one of” occurs in a MANDATORY or REQUIRED list. Note that in some cases two or more prompt elements might be required in practice due to Pitfall statements ~~or NOTES~~. Alternatives not listed can be considered to meet the “at least one of” criterion with suitable argument support as to acceptability. (This is according to the principle that prompt element lists are not considered to be exhaustive, and therefore safety cases can add prompt elements as appropriate to the local version of those prompt element lists.)

h) “Tailoring” of list items ~~via omitting consideration of one or more requirements and/or list elements without acceptable justification is not permitted. Safety case deviations from list items are only permitted via the must adhere to~~ safety case deviation rules ~~discussed~~ summarized in Table 4.1 above.

#### 4.2.18 Fault Containment Region (FCR)

“A collection of elements “that operates correctly regardless of any arbitrary logical or electrical fault outside the region.”

**Reference:** (Lala, J., and Harper, R. Architectural principles for safety-critical real-time applications, Proceedings of the IEEE, 82(1), Jan. 1994, pp. 25-40.)

**NOTE:** Two FCRs are required to ensure fault detection and/or fault mitigation in the presence of an arbitrary FCR failure.

#### GENERAL TERMINOLOGY REFERENCES (INFORMATIVE):

##### 5.1.1.2 REQUIRED:

- a) Addresses Elements out of Context (EooC) (see Section 5.7.3)

- b) Additional evidence not included in the safety case is provided upon request to an independent assessor or self-auditor

**EXAMPLES:** Test results are summarized in the safety case. Details and any additional descriptive material of evidence are made available upon request.

(NOTE – Paragraph 5.1.1.2 not shown in its entirety)

#### 5.4.2.1 MANDATORY:

- a) Safety case records the experimental design or other data collection strategy for evidence based on data collection
- b) Identify criteria used to determine sufficiency of evidence
- c) Argue evidence is sufficient to result in an acceptable safety case
  - 1) Describe manner in which evidence is used to support or refute the validity of an argument and/or claim.
  - 2) Arguments that risk of confirmation bias has been mitigated

#### 5.5.1.2 REQUIRED:

- a) Identify any risk that is less than fully mitigated to an acceptable level as an “accepted risk.” These include but are not limited to:

- 1) Unmitigated risks for which no mitigation measure has been taken

**EXAMPLE:** An item level safety assessment potential hazard that was determined to be extremely improbable or otherwise not something that could happen in the “real world” is an accepted risk and is included in the safety case as an unmitigated risk.

(NOTE – Paragraph 5.5.1.2 not shown in its entirety)

#### 7.2.1.2 REQUIRED:

- c) Identify remote and indirect safety related communication channels, including if present (for each category listed; if none so state):

- 1) Occupant communication devices

**EXAMPLE:** Personal cell phone interface via a ride hailing and rider security app used to set destination, signal that it is time to egress, and confirm correct vehicle for ingress

- 2) Traffic marshalling communication devices

**EXAMPLE:** Taxi queue dispatcher request for next vehicle

- 3) Remote status and actuation capabilities, such as:

- i) Vehicle disabled indication
- ii) Dispatching

**EXAMPLES:** Destination request via occupant cell phone app, remote specification of destination and route by central operations

- iii) Remote diagnosis
- iv) Remote feature activation, including remote change of safety related behavior permissions and limitations
- v) First-Emergency responder support features
- vi) Police support features

(NOTE – Paragraph 7.2.1.2 not shown in its entirety)

#### 7.5.1.3 HIGHLY RECOMMENDED:

- a) Interactions with non-human at risk road users that might present a danger to vehicle occupants, including:
  - 1) Large wild animals
  - 2) Large domesticated animals

See also Section 7.2.

#### 8.1.1.1 MANDATORY:

- a) Identify all hazards related to autonomy. If none, so state.
- b) Autonomy-related implications of the ODD (See Section 8.2)
- c) Sensing (See Section 8.3)
- d) Perception (See Section 8.4)
- e) Algorithms-Machine learning and “AI” techniques (See Section 8.5)
- f) Planning (See Section 8.6)
- g) Prediction (See Section 8.7)
- h) Item trajectory and item control (See Section 8.8)
- i) Actuation (See Section 8.9)
- j) Timing (See Section 8.10)

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## UL 50, Standard for Safety for Enclosures for Electrical Equipment, Non-Environmental Considerations

### 2. Adhesives Used to Secure Observation Windows

#### Annex B - Reference Standards (Table truncated for clarity)

Ref. No.	UL 50 Clause No.	Canada	Mexico	United States
16	6.2.5, and 6.2.6, <u>6.6.1.5 and 6.6.1.6</u>	Annex B <u>E</u>	No Equivalent	Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C

### 3. Add Definitions of Cabinet, Cutout Box, Junction Box, and Pull Box

#### Annex B - Reference Standards (Table truncated for clarity)

Ref. No.	UL 50 Clause No.	Canada	Mexico	United States
17	5.3.1 and 5.4.1	C22.1, Canadian Electrical Code	<del>No Equivalent</del> <u>NOM-001-SEDE,</u> <u>Instalaciones</u> <u>Electricas</u> <u>(utilizacion)</u>	NFPA 70, National Electrical Code

### 4. Restrictions on Use of Sheet Metal Screws

10.4.12 Wire binding screws of equipment grounding terminals shall comply with Annex B, Ref. No. 17. A tapped hole provided for a grounding screw shall have a minimum of two full threads or shall comply with Clause 10.4.13.

10.4.13 The threads of holes provided in a box for attachment of a ground screw having fewer than 2 full threads shall not strip when a No. 8 screw is tightened to a torque of 2.26 N•m (20 lbf-in), or a No. 10 screw is tightened to a torque of 3.96 N•m (35 lbf-in). During the test, a plated flat steel washer of a size appropriate for the screw shall be centered under the head of the screw. Holes having at least two full threads are not required to be tested.

10.4.14 Wire binding screws of equipment grounding terminals shall comply with Annex B, Ref. No.18.

#### Annex B - Reference Standards (Table truncated for clarity)

Ref. No.	UL 50 Clause No.	Canada	Mexico	United States
18	10.4.12	No Equivalent	<del>No Equivalent</del> <u>Metallic Outlet</u> <u>Boxes, NMX-J-</u> <u>023/1-ANCE</u>	Metallic Outlet Boxes, UL 514A

## UL 50, Standard for Safety for Enclosures for Electrical Equipment, Non-Environmental Considerations

### 8. New Annex E for Adhesives, Enclosures, Non-mechanical Means of Securement

E2.2.3.1 All test specimens shall be placed in an air circulating oven at:

- a) 100°C +/- 1°C for 168 hours, or
- b) ~~80~~ 82°C +/-1°C for 1,344 hours.

### Annex B - Reference Standards (Table truncated for clarity)

Ref. No.	UL 50 Clause No.	Canada	Mexico	United States
3	6.6.1.1(b), 6.6.1.3(b)(1) & (2), <u>E2.3.4.1.1</u>	CSA C22.2 No. 14 - 13, Industrial Control Equipment , Clause 6.15.3 and Clause 6.15.4, respectively	No Equivalent	Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C

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**UL 50E, Standard for Safety for Enclosures for Electrical Equipment, Environmental Considerations****13. New Annex E for Adhesives, Enclosures, Non-mechanical Means of Securement**

E2.2.3.1 All test specimens shall be placed in an air circulating oven at:

- a) 100°C +/- 1°C for 168 hours, or
- b) ~~80~~ 82°C +/-1°C for 1,344 hours.

E2.3.4.1.1 The overall enclosure and all observation windows shall comply with the Resistance to Impact Test specified in NMX-J-235/1-ANCE/CSA C22.2 No. 94.1/UL 50 Annex B, Ref. No. 3.

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## BSR/UL 67, Standard for Safety for Panelboards

### 1. Addition of New Requirements in Article 705 of the 2020 NEC to UL 67

6.6.11 Panelboards intended for interconnection with one or more electric power production sources operating in parallel with a primary source(s) of electricity, in accordance with Article 705 of the National Electrical Code, NFPA 70, shall be permitted to have provisions for connection(s) as noted in (a) and (b). See 34.16 for marking requirements.

a) ~~Supply Side Connection – Panelboards intended for use in accordance with Section 705.12(A) of Article 705 of the National Electrical Code, NFPA 70, shall be permitted to have provisions for interconnecting parallel power sources on the supply side of the service disconnecting means applications where the non-primary sources are connected on the supply side of the service disconnecting means, see 6.2.1(g), shall comply with the following:~~

- 1) The sum of the continuous current output ratings of all supply side overcurrent devices connected to power production sources shall not exceed the rating of the panelboard unless protected by a Power Control System (PCS) complying with 6.6.12.
- 2) If connections are provided to interconnect power production sources, those connections shall accommodate conductors no smaller than 6 AWG copper or 4 AWG aluminum.

b) ~~Load Side Connection – Panelboards for use in Section 705.12(D) of Article 705 of the National Electrical Code, NFPA 70, shall be permitted to have one or more load side disconnects for the interconnection of parallel power sources. The total rating of all overcurrent devices supplying the panelboard shall not exceed the rating of the panelboard. applications where the non-primary sources are connected on the load side of the service disconnecting means shall comply with the following:~~

- 1) Shall be permitted to have one or more load side disconnects for the interconnection of parallel power sources.
- 2) The total rating of all overcurrent devices supplying the panelboard shall not exceed the rating of the panelboard when protected by a Power Control System (PCS) complying with 6.6.12

*Exception: The total rating of all overcurrent devices supplying the panelboard may exceed the rating of the panelboard by up to 120% of the rating of the panelboard if the overcurrent device(s) intended for use with interconnected*

parallel power sources are positioned at the opposite end from the main input, or if the connections are at either end of a center-fed panelboard.

6.6.12 ~~Panelboards intended to provide uninterruptible power supply to control circuitry shall be marked in accordance with 34.17.1~~ A Power Control System (PCS) or components of a PCS may be installed, or instructions to install a PCS may be specified, to control the output of non-primary sources to be interconnected to the panelboard. PCSs shall comply with the Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources, UL 1741. Markings, as specified in 34.16.7, shall be provided when a panelboard includes a PCS, components of a PCS, or instructions to install a PCS.

6.6.13 Panelboards intended to provide uninterruptible power supply to control circuitry shall be marked in accordance with 34.17.1.

31.2 For NEC Article 705 applications noted in 6.6.11:

4 a) Supply side connections – The combined sum of the current rating of all supply side disconnect(s) shall not exceed the rating of the panelboard. See 34.16.6.

2 b) Load side connections – The combined sum of the current rating of all overcurrent devices supplying the panelboard shall not exceed the rating of the panelboard.

*Exception: The combined sum may exceed the rating of the bus bars, or the rating of the main overcurrent device by up to 120% if overcurrent device(s) are positioned as noted in 6.6.11(b)(2), Exception. See 34.16.5.*

### **34.16 Parallel Power Source Panelboard**

34.16.5 For panelboards with the load side disconnect(s) intended for connection to parallel power sources positioned at the opposite end from the main input in accordance with 6.6.11(b)(2), Exception, shall be marked with the following, or equivalent:

WARNING

INVERTER POWER SOURCE OUTPUT CONNECTION

DO NOT RELOCATE THIS

OVERCURRENT DEVICE

34.16.7 Panelboards intended to have any non-primary sources controlled by a PCS shall be provide with one of the following markings, as appropriate:

a) Panelboards with a PCS integrated into the design shall be marked “Alternate power sources are controlled by a Power Control System (PCS). The setting of the PCS shall be considered the power source output circuit current”, or equivalent.

b) Panelboards provided with components intended for use as part of a PCS shall be marked “This Panelboard is Intended to be Installed as Part of a System Where Alternate Power Sources are controlled by a Power Control System (PCS). Refer to Installation Instructions for additional details regarding the complete installation of the PCS. The setting of the PCS shall be considered the power source output circuit current”, or equivalent.

c) Panelboards provided with instructions to install a PCS shall be marked “When used to interconnect parallel electric power production sources, Power Control System (PCS) Model \_\_\_\_\_, Manufactured by \_\_\_\_\_ may be used to control the output of alternate sources”, or equivalent.

## 2. Correction to Table 25.3

**Table 25.3**

**Peak-let-through currents and clearing  $I^2t$  for fuses**

Fuse rating	Between threshold and 50 KA		100 KA		200 KA	
A	$I_p \times 10^3$	$I^2t \times 10^3$	$I_p \times 10^3$	$I^2t \times 10^3$	$I_p \times 10^3$	$I^2t \times 10^3$
<b>Class CC fuses</b>						
0 - 15	3	2	3	2	4	3
16 - 20	3	2	4	3	5	3
21 - 30	4	7	7.5	7	12	7
<b>Class G fuses</b>						
0 - 1	-	-	1	0.8	-	-
2 - 3	-	-	1.5	1.2	-	-
4 - 6	-	-	2	1.8	-	-
7 - 10	-	-	3	2.8	-	-
11 - 15	-	-	4	3.8	-	-
16 - 20	-	-	5	5	-	-
21 - 25	-	-	6	6	-	-
26 - 30	-	-	7	7	-	-
31 - 35	-	-	8	14	-	-

36 - 40	-	-	8.5	17	-	-
41 - 45	-	-	9	18.5	-	-
46 - 50	-	-	9.5	21	-	-
51 - 60	-	-	10.5	25	-	-
<b>300-V Class T fuses</b>						
0 - 30	5	3.5	7	3.5	9	3.5
31 - 60	7	15	9	15	12	15
61 - 100	9	40	12	40	15	40
101 - 200	13	150	16	150	20	150
201 - 400	22	550	28	550	35	550
401 - 600	29	1000	37	1000	46	1000
601 - 800	37	1500	50	1500	65	1500
801 - 1200	50	3500	65	3500	80	4000
<b>Class J and 600-V T fuses</b>						
0 - 30	6	7	7.5	7	12	7
31 - 60	8	30	10	30	16	30
61 - 100	12	60	14	80	20	80
101 - 200	16	200	20	300	30	300
201 - 400	25	1000	30	1100	45	1100
401 - 600 <sup>a</sup>	35	2500	45	2500	70	2500
601 - 800	50	4000	55	4000	75	4000
<b>Class L fuses</b>						
601 - 800	80	10 000	80	10 000	80	10 000
801 - 1200	80	12 000	80	12 000	120	15 000
1201 - 1600	100	22 000	100	22 000	150	30 000
1601 - 2000	110	35 000	120	35 000	165	40 000
2001 - 2500	-	-	165	75 000	180	75 000
2501 - 3000	-	-	175	100 000	200	100 000
3001 - 4000	-	-	220	150 000	250	150 000
4001 - 5000	-	-	-	350 000	300	350 000
5001 - 6000	-	-	-	350 000	350	500 000
<b>Class RK5 fuses<sup>b</sup></b>						
0 - 30	11	50	11	50	14	50

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31 - 60	20	200	21	200	26	200
61 - 100	22	500	25	500	32	500
101 - 200	32	1600	40	1600	50	2000
201 - 400	50	<del>5000</del> <u>5200</u>	60	5000	75	6000
401 - 600	65	10 000	80	10 000	100	12 000
<sup>a</sup> 800 A values apply to 600 V Class T fuses only.						
<sup>b</sup> The value for a Class RK5 fuse shall be used when a Class RK1 fuse is specified for overcurrent protection.						

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## BSR/UL 414, Standard for Safety for Meter Sockets

### 1. Revision of requirements to include removable connector with integral mounting tang

#### PROPOSAL

7.14 Removable wire connectors provided with the meter socket equipment, must meet the requirements of Section 24 when replaced with the torque specified in 27.10.18.

#### 10 Wire-Bending Distance

10.1 The wire-bending distance provided in equipment for conductors to be installed in the field shall be as specified in:

- a) Table 10.1 for the largest conductor, as specified by the marking in 27.10.4, entering or exiting the enclosure through the wall opposite the opening for wire in the connector or
- b) Table 10.2 for the largest conductor, as specified by the marking, if the conductor does not enter or exit the enclosure through the wall opposite the opening for wire in the connector.

*Exception No. 1: For a meter socket not installed in a metering transformer cabinet or interior, the wire-bending distance may be as specified in Table 10.2 for a conductor not larger than 350 kcmil (177 mm<sup>2</sup>) that enters or exits the enclosure opposite the opening for wire in the connector provided:*

- a) *The connector is of the lay-in type or removable wire connector with integral mounting tang, and directly faces the enclosure wall through which the conductor enters or exits or is angled toward the conductor exit in the wall and*
- b) *The offset, if any, (measured between the center line of the opening for wire in the connector and the center line of the opening in the enclosure) as shown in Figure 10.1 is not greater than 50 percent of the wire-bending distance provided.*

*The center line of the opening for wire in a connector angled toward the exit in the wall shall intersect the center line of the exit opening at the enclosure wall or external to the enclosure as illustrated by wire terminal G in Figure 10.2.*

*Exception No. 2: For a meter socket not installed in a metering transformer cabinet or interior, the wire-bending distance may be as specified in Table 10.2 for a conductor not larger than 350 kcmil (177 mm<sup>2</sup>) that enters or exits the enclosure opposite the opening for wire in the connector provided the terminal is of the lay-in type or removable wire connector with integral mounting tang, and complies with the limitations specified in Figure 10.2.*

**Table 10.1***Minimum wire-bending distance at connectors in inches*

<b>Wire size,</b>		<b>Wires per terminal (pole)<sup>a</sup></b>							
<b>AWG or kcmil</b>	<b>(mm<sup>2</sup>)</b>	<b>1</b>		<b>2</b>		<b>3</b>		<b>4 or more</b>	
14 - 10	2.1 - 5.3	Not specified		-		-		-	
8	8.4	1-1/2		-		-		-	
6 <sup>b</sup>	13.3	2		-		-		-	
4 <sup>b</sup>	21.2	3		-		-		-	
3 <sup>b</sup>	26.7	3		-		-		-	
2 <sup>b</sup>	33.6	3-1/2		-		-		-	
1 <sup>b</sup>	42.4	4-1/2		-		-		-	
1/0 <sup>b</sup>	53.5	5-1/2		5-1/2		7		-	
2/0 <sup>b</sup>	67.4	6		6		7-1/2		-	
3/0 <sup>b</sup>	85.0	6-1/2	(1/2)	6-1/2	(1/2)	8		-	
4/0 <sup>b</sup>	107	7	(1)	7-1/2	(1-1/2)	8-1/2	(1/2)	-	
250 <sup>b</sup>	127	8-1/2	(2)	8-1/2	(2)	9	(1)	10	
300 <sup>b</sup>	152	10	(3)	10	(2)	11	(1)	12	
350 <sup>b</sup>	177	12	(3)	12	(3)	13	(3)	14	(2)
400	203	13	(3)	13	(3)	14	(3)	15	(3)
500	253	14	(3)	14	(3)	15	(3)	16	(3)
600	304	15	(3)	16	(3)	18	(3)	19	(3)
700	355	16	(3)	18	(3)	20	(3)	22	(3)
750	380	17	(3)	19	(3)	22	(3)	24	(3)
800	405	18		20		22		24	
900	456	19		22		24		24	
1000	506	20		-		-		-	
1250	633	22		-		-		-	
1500	760	24		-		-		-	
1750	887	24		-		-		-	
2000	1013	24		-		-		-	

<sup>a</sup> The wire-bending distance may be reduced by the number of inches shown in parentheses under the following conditions:

1) Lay-in or removable wire connectors receiving one wire each are used (there may be more than one removable wire per terminal) and

2) The removable wire connectors can be removed from their intended location without disturbing structural or electrical parts other than a cover, and can be reinstalled with the conductor in place.

<sup>b</sup> See Exception Nos. 1 and 2 to [10.1](#) for conditions in which lay-in type or removable wire or removable connectors may be used in accordance with Table [10.2](#) in meter sockets.

For SI units one inch = 25.4 mm.

24.1 The insulating base supporting a field wiring terminal shall not be damaged when: ~~wire connectors securing short lengths of conductors of rated ampacity are torqued to 110 percent of the value marked on the meter socket.~~

a) Supporting a field wiring terminal where wire connectors securing short lengths of conductors of rated ampacity are torqued to 110 percent of the value marked on the meter socket.

b) With respect to 7.6 and 7.14, the hardware securing the wire connector is torqued to 110 percent of the value marked on the meter socket.

27.10.18 With respect to 7.6 and 7.14, tightening torque for the hardware that fastens the wire connector to the meter socket shall be provided in the equipment by the manufacturer.

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## BSR/UL 493, Standard for Safety for Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables

### PROPOSAL

5.13.2 One of the specimens shall be aged in a ~~full-draft circulating-air forced air-circulating~~ oven with ~~100—200 fresh-air changes per hour~~; the other left at room temperature for 24 h in still air at 23.0 ±5.0°C before being tested. The time and temperature shall be in accordance with the ~~air even forced air-circulating oven~~ aging conditions corresponding to the rated temperature printed on the outer surface of the insulation or jacket material. The specimen shall then be removed from the oven and kept in still air to cool to room temperature for 60 min before being tested.

**Table 2**  
**Physical properties of PVC jacket**  
[See 4.5.1, 4.7.2, 7.2.1 (a) and (d)]

Condition of specimens at time of measurement	Minimum ultimate elongation [1 inch (25 mm) bench marks]a	Minimum tensile strength
Unaged	100 percent [1 inch (25 mm)]	1500 lbf/in <sup>2</sup> or 10.3 MPa
From cable marked "UF-B":  Aged in a <del>full-draft circulating-air forced air-circulating</del> oven for 240 h at 100.0 ±10°C	Where the specimens are buffed and die-cut, 45 percent of the result with unaged specimens; where the specimens are tubular rather than being buffed and die-cut 65 percent of the result with unaged specimens	70 percent of the result with unaged specimens
From cable not marked with the suffix letter "-B":  Aged in a <del>full-draft circulating-air forced air-circulating</del> oven for 168 h at 100.0 ±1.0°C	Where the specimens are buffed and die-cut, 45 percent of the result with unaged specimens; where the specimens are tubular rather than being buffed and die-cut, 65 percent of the result with unaged specimens.	65 percent of the result with unaged specimens

a The methods of preparation of samples, of selection and condition of specimens and of making the measurements and calculations for ultimate elongation and tensile strength are indicated under the heading "Physical Properties Tests of Insulation and Jacket" in the Reference Standard for Electrical Wires, Cables, and Flexible Cords, UL 1581. Jacket specimens shall have all conductors, insulation, and other parts removed. The cross-sectional area of an irregularly shaped tubular specimen of jacket from a flat cable is to be computed by whichever of the following formulas is applicable:

$$A \text{ in}^2 = \frac{W_g}{163.87G}$$

in which:

A is the cross-sectional area of the specimens in square inches,

Condition of specimens at time of measurement	Minimum ultimate elongation [1 inch (25 mm) bench marks]a	Minimum tensile strength
<p>Wg is the weight in grams of a 10-inch length of jacket, and  G is the specific gravity of the PVC compound determined by means of Young's gravimeter or the displaced method (in either case, the specimen is to be dipped in alcohol as a wetting agent before the specimen is dipped into water) or;</p> $A m^2 = \frac{4 \times 10^{-6} W_g}{G}$ $A cm^2 = \frac{0.04 W_g}{G}$ $A mm^2 = \frac{4 W_g}{G}$ <p>in which:  A is the cross-sectional area of the specimen in square meters, square centimeters, or square millimeters;  Wg is the weight in grams of a 250-mm length of jacket; and  G is the specific gravity of the PVC compound determined by one of the means noted above.</p>		

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## BSR/UL 508A, Standard for Safety for Industrial Control Panels

### 2. SCCR for EMI Filters in Panels

#### 36.4 Surge protective devices (SPDs)

36.4.1 An SPD shall comply with the requirements in the Standard for Surge Protective Devices, UL 1449. ~~An electromagnetic interference filter, such as an EMI, RFI, or line filter, shall comply with the Standard for Electromagnetic Interference Filters, UL 1283.~~

#### 36.5 Line Filters

36.5.1 An electromagnetic interference (EMI) or radio frequency interference (RFI) filter shall comply with the Standard for Electromagnetic Interference Filters, UL 1283 or the Standard for Passive Filter Units for Electromagnetic Interference Suppression – Part 3: Passive Filter Units for Which Safety Tests are Appropriate, UL 60939-3.

36.5.2 An active or passive harmonic filter shall comply with the Standard for Industrial Control Equipment, UL 508, or the Standard for Adjustable Speed Electrical Power Drive Systems - Part 5-1: Safety Requirements - Electrical, Thermal and Energy, UL 61800-5-1.

36.5.3 A line filter, as described in 36.5.1 and 36.5.2, shall have a voltage rating not less than the rated circuit voltage, and have a current rating that is not less than the sum of the current ratings of all connected loads or not less than the ampacity of the internal wiring conductors.

#### 47.1 Surge protective devices (SPDs)

47.1.1 An SPD used for overvoltage protection shall comply with the requirements in the Standard for Surge Protective Devices, UL 1449.

47.1.2 The normal operating voltage rating and MCOV of the SPD shall not be less than the rated circuit Line-to-Line (full phase) voltage.

47.1.3 A protector for data communications and fire-alarm circuits shall comply with the Standard for Protectors for Data Communications and Fire-Alarm Circuits, UL 497B.

47.1.4 ~~An electromagnetic interference filter, such as an EMI, RFI, or line filter, shall comply with the Standard for Electromagnetic Interference Filters, UL 1283.~~

47.1.54 A dry-type capacitor that is placed across the line, without other impedances in series, shall comply with the Dielectric Voltage Withstand Test in the Standard for Industrial Control Equipment, UL 508.

47.1.65 A capacitor, an axial lead diode, and a transient voltage surge suppressor, and an electromagnetic interference filter shall have a rated voltage not less than the rated circuit voltage. An electromagnetic interference filter shall have a current rating that is not less than the sum of the current ratings of all connected loads or not less than the ampacity of the internal wiring conductors.

#### 47.4 Line Filters

47.4.1 An electromagnetic interference (EMI) or radio frequency interference (RFI) filter shall comply with the Standard for Electromagnetic Interference Filters, UL 1283 or the Standard for Passive Filter Units for Electromagnetic Interference Suppression – Part 3: Passive Filter Units for Which Safety Tests are Appropriate, UL 60939-3.

47.4.2 An active or passive harmonic filter shall comply with the Standard for Industrial Control Equipment, UL 508, or the Standard for Adjustable Speed Electrical Power Drive Systems - Part 5-1: Safety Requirements - Electrical, Thermal and Energy, UL 61800-5-1.

47.4.3 A line filter, as described in 47.4.1 and 47.4.2, shall have a voltage rating not less than the rated circuit voltage, and have a current rating that is not less than the sum of the current ratings of all connected loads or not less than the ampacity of the internal wiring conductors.

#### **SB4.2 Short circuit current ratings of individual power circuit components**

SB4.2.1 All power circuit components, including disconnect switches, branch circuit protective devices, branch circuit fuse holders, load controllers, motor overload relays, terminal blocks, ~~and~~ bus bars, and line filters, such as electromagnetic interference (EMI) or radio frequency interference (RFI) filters, or active or passive harmonic filters shall have a short circuit current rating expressed in amperes or kiloamperes and voltage.

*Exception No. 1: Power transformers, reactors, current transformers, dry-type capacitors, resistors, varistors, and voltmeters are not required to have a short circuit current rating.*

*Exception No. 2: The "S" contactor of a wye-delta motor controller is not required to have a short circuit current rating.*

*Exception No. 3: Enclosure air conditioners that are cord-and-attachment-plug connected are not required to have a short circuit current rating.*

*Exception No. 4: Wiring ferrules are not required to have a short circuit current rating, provided that the requirements of 29.3.5A are met.*

*Exception No. 5: ~~Electromagnetic interference filters, such as an EMI, RFI, or a line filter used on the line or load side of power conversion equipment are not required to have a short circuit current rating.~~ Components installed on the load side of a variable-speed drive where the variable-speed drive has built-in electronic short circuit protection, are not required to have a short circuit current rating.*

**Table SB4.1**  
**Assumed maximum short circuit current rating for unmarked components**

Component	Short circuit current rating, kA
Bus bars	10
Circuit breaker (including GFCI type)	5
Current meters	a
Connectors for Use in Data, Signal, Control and Power Applications	10
Current shunt	10
Fuseholder	10
Industrial control equipment:	
a. Auxiliary devices (overload relay)	5
b. Switches (other than mercury tube type)	5
c. Mercury tube switches	
Rated over 60 amperes or over 250 volts	5
Rated 250 volts or less, 60 amperes or less, and	3.5
over 2 kVA	1
Rated 250 volts or less and 2 kVA or less	
Motor controller, (including combination motor controllers, float and pressure operated)	

motor controllers, power conversion equipment and solid state motor controllers), <u>and active and passive harmonic filters</u> rated in horsepower (kW) <sup>d</sup>	5 <sup>c</sup>
a. 0 – 50 (0 – 37.3)	10 <sup>c</sup>
b. 51 – 200 (38 – 149)	18 <sup>c</sup>
c. 201 – 400 (150 – 298)	30 <sup>c</sup>
d. 401 – 600 (299 – 447)	42 <sup>c</sup>
e. 601 – 900 (448 – 671)	85 <sup>c</sup>
f. 901 – 1600 (672 – 1193)	10
Meter socket base	10 <sup>b</sup>
Miniature or miscellaneous fuse	2
Receptacle (GFCI type)	10
Receptacle (other than GFCI type)	0.2
Supplementary protector	5
Switch unit	10
Terminal block or power distribution block	10
Multi-point interconnection power cable assembly	10
Cable Assemblies and Fittings for Industrial Control and Signal	5
Distribution	10
Multiwire (power distribution) lug	10
<u>Electromagnetic interference (EMI) or radio frequency interference (RFI) filters rated:</u>	
a. <u>100 amperes or less</u>	
b. <u>101 – 400 amperes</u>	

<sup>a</sup> A short circuit current rating is not required when connected via a current transformer or current shunt. A directly connected current meter shall have a marked short circuit current rating.

<sup>b</sup> The use of a miniature fuse is limited to 125-volt circuits.

<sup>c</sup> Standard fault current rating for motor controller rated within specified horsepower range.

<sup>d</sup> Highest rated horsepower of motor controller. For devices rated in amperes instead of horsepower or kW, use Table 50.1 to convert to horsepower.

## BSR/UL 746A, Standard for Safety for Polymeric Materials - Short Term Property Evaluations

### 1. Ball Pressure Test (BPT) Revision in UL 746A Polymer Variation Program (Table 9.2)

**Table 9.2**

#### Test Programs based upon compound variations

Program Code from Table 9.1	Test Program <sup>(1)</sup>
O	No testing necessary
A	Flame, minimum thickness at all flame ratings assigned to the original material formulation  <i>Exception: HB flammability testing of polymer variations is not required if the burning rate of each previously tested thickness of the original formulation does not exceed 80% of the HB burning rate limits indicated in UL 94, the Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.</i>
B <sup>2</sup>	All the testing required in Program Code A, plus:
	UL 746A: HWI - Hot Wire Ignition
	UL 746A: CTI - Comparative Tracking Index
	UL 746A: HDT - Heat Deflection Temp. or VT - Vicat Temp. or BP - Ball
	Pressure Temp (thermoplastics only <u>as per IEC 60695-10-2 Method B</u> )
C <sup>2</sup>	Full side by side testing of all critical properties testing required: UL 94: (Flame) Minimum and maximum thickness at all flame ratings assigned to the original material formulation ID: Infrared Analysis (IR), Differential Scanning Calorimetry (DSC), Thermogravimetric Analysis (TGA) UL 746A: Hot Wire Ignition (HWI) UL 746A: High Current Arc Ignition (HAI) UL 746A: Comparative Tracking Index (CTI) UL 746A: Heat Deflection Temp. (HDT) or Vicat Temp.(VT) or Ball Pressure Temp. (BP) (thermoplastics only <u>as per IEC 60695-10-2 Method B</u> ) UL 746A: Tensile Strength (TS) or Flexural Strength (FS) UL 746A: Tensile Impact (TI) or Izod Impact (II) or Charpy Impact (CI)
D	UL 746B Long Term Thermal Aging (Only for materials with elevated RTI values based on LTTA testing. See UL 746B, Section 8, Relative Thermal Index - Based on Long-Term Thermal Aging-Programs.)

E	UL 746C Suitability for Outdoor Use (Only for materials that were previously subjected to the UV or Water Immersion Program in UL 746C, Section 25, Ultraviolet Light Exposure, and Section 26, Water Exposure and Immersion.)
F <sup>2</sup>	All the testing required in Program Code C, plus:
	UL 746A: Dielectric strength
	UL 746A: Volume resistivity
	UL 746A: Dimensional stability from Table 6.1 of UL 746C
M <sup>2</sup>	Mechanical Properties: UL 746A: Tensile Strength (TS) or Flexural Strength (FS) UL 746A: Tensile Impact (TI) or Izod Impact (I) or Charpy Impact (CI)
Footnotes	
(1) For all Test Programs, identification tests are required: (Infrared Analysis (IR), Differential Scanning Calorimetry (DSC), Thermogravimetric Analysis (TGA))	
(2) Following is the thickness requirement for comparison tests other than flammability:	
	<p>HWI, HAI - Nominal 3.0 mm for materials that are able to be processed at this thickness. If not, the maximum thickness at which the original material formulation was tested.</p> <p><i>Exception: For materials that show PLC-0 in HWI/HAI test at 3.0 mm, perform the comparative test at a next lower thickness at which the original material formulation was tested to show ignition. If the original formulation material did not ignite at any of the tested thickness, then the comparative tests may be carried out at 3.0 mm.</i></p>
	TS/FS - Nominal 3.0 mm or 4.0 mm for materials that are able to be processed at this thickness. If not, the maximum thickness at which the original material formulation was tested.
	HDT - Nominal 3.0 mm/4.0 mm for materials that are able to be processed at this thickness. If not, this test shall not be performed.
	icat - Nominal 3.0 mm for materials that are able to be processed at this thickness. If not, stack samples not more than 3 layers to achieve thickness between 3.0 - 6.5 mm.
	CTI, BP - Nominal 3.0 mm for materials that are able to be processed at this thickness. If not, stack multiple samples to obtain a thickness of at least 3.0 mm.
	DS, VR - Nominal 0.75 mm, 1.0 mm, or 1.5 mm for materials that are able to be processed at this thickness. If not, the maximum thickness at which the original material formulation was tested.
	Dimensional Stability - Nominal 3.0 mm for materials that are able to be processed at this thickness. If not, this test shall not be performed.



**BSR/UL 864, Standard for Control Units and Accessories for Fire Alarm Systems****Proposals****1. For Recirculation Review: Building System Information Unit proposal**

(NEW) 3.13A BUILDING SYSTEM INFORMATION UNIT (BSIU) – Computer-based electronic device(s) that is intended to display building information and execute system control functions, including fire system information display and control.

**(NEW) BUILDING SYSTEM INFORMATION UNIT (BSIU) PROCESSING EQUIPMENT SOFTWARE****54A General**

54A.1 Sections 54A - 54C describe the methods for evaluation of the software utilized in BSIUs. These sections apply to equipment for use at the protected premises for the purpose of display and control of the fire alarm, smoke control and mass notification system(s).

54A.2 BSIU processing equipment meeting all the conditions specified in 54A – 54C need not be subjected to Sections 5 – 28, 63 – 90, and 93 - 94.

54A.3 The product shall comply with the following:

- a) Performance Details and Specifics - Sections 30 and 31;
- b) Trouble Signals, Section 57;
- c) Software, Sections 59.1.1 – 59.2.3 and 59.3;
- d) Combination Systems, Carbon Monoxide signaling, 61.3.1, 61.3.3, 61.3.4 and 61.3.9; and
- e) Combination Systems, Mass Notification System interconnection, Section 47.2
- f) Releasing device (non-extinguishing and non-water based), 53.3 and 58.4;
- g) Releasing service, 36.1.2

**54B Operation****54B.1 General**

54B.1.1 A system meeting, but not exceeding the specifications of 54C.1 (a), shall be submitted for evaluation. The system is to be interconnected to the compatible fire alarm control units identified in the system's installation instructions.

54B.1.2 The time periods for fire, mass notification or smoke control alarm and/or supervisory signal annunciation at the BSIU shall not be greater than 10 s from the initiation of an alarm or supervisory condition, or operation of a manually-activated switch and subsequent activation of signals in a worst case loaded system.

54B.1.3 Trouble signals and their restoration to normal on the fire alarm, mass notification or smoke control system shall be annunciated within 200 s of the occurrence of the adverse condition, fault, or the restoration to normal.

54B.1.4 The following operation shall be met where the interconnection of the BSIU suppresses the audible aspect of the change of status signals within the fire alarm control unit:

- a) Failure of any part of the BSIU configuration which affects BSIU fire alarm, releasing, smoke control or mass notification operation shall result in the fire alarm control unit automatically audibly annunciating new change of status signals.

Exception: Interconnecting wiring between a stationary computer and the computer's keyboard, video monitor, touch screen, or mouse type device are not required to be monitored for integrity when:

- a) A complete open in the interconnecting cable is visually indicated so as to be obvious to the user or the open does not affect the required system operation except for loss of the faulted function and
- b) The interconnecting cable(s) does not exceed 8 ft.

- b) A fault or adverse condition on interconnecting wiring in the BSIU configuration which affects BSIU system fire alarm, smoke control or mass notification operation shall result in the fire alarm control unit automatically audibly annunciating new change of status signals.



- c) When the proper operation of the BSIU is adversely affected due to actuation of the security means specified in 59.2.3 or during any reprogramming, the fire alarm control unit shall automatically audibly annunciate new change of status signals.

## **54B.2 Display information**

54B.2.1 The display content information at the BSIU shall be equivalent to the display content provided by the interconnected fire alarm control unit, mass notification control unit, or Firefighter Smoke Control Station (FSCS).

54B.2.2 Systems serving two or more zones shall visually identify the zone of origin and/or point addressable device of the status change.

54B.2.3 The visual annunciation means shall simultaneously display all zones having a status change (e.g. fire-alarm, supervisory, pre-discharge, discharge/release, trouble, abort, and other signals) or where not displayed simultaneously, all the following conditions shall apply:

- a) The display shall indicate the initial status change for the highest priority type signal.
- b) An indication for each type (such as fire alarm, fire trouble, sprinkler supervisory) of active non-displayed status changes shall be continuously visible during any off-normal condition.
- c) A visual indication showing deactivated alarm notification appliances as required by 33.3.6.
- d) The non-displayed status changes shall be capable of being displayed only by manual operation(s).
- e) The display controls shall not interfere with the normal operation of the unit.
- f) When concurrent signals are received, they shall be indicated as follows in descending order of priority:
  - 1) Signals associated with life safety.
  - 2) Signals associated with property safety.
  - 3) Supervisory signals and trouble signals associated with life and/or property safety.
  - 4) All other signals.

54B.2.4 Non-electrical visual annunciation integral with a switch shall include obvious distinct indications for both the normal and off-normal position of the switch. Utilization of the switch position does not meet the intent of complying with this requirement.

54B.2.5 Controls provided specifically for the purpose of manually overriding any automatic building and fire control functions intended to increase the level of life safety for occupants or control the spread of the harmful effects of fire or other dangerous products (emergency control function), shall provide visible indication of the status of the associated control circuits.

54B.2.6 Any manual means for turning off activated occupant notification appliances (silencing) shall comply with 33.3.6 and 33.3.9.

54B.2.7 An alarm signal visual display status shall be maintained continuously (locked in) until a resetting device in the control unit/BSIU system is operated manually.

54B.2.8 A means for silencing a supervisory signal sounding appliance shall comply with 33.5.4 – 33.5.5.

54B.2.9 When a common audible signal, as part of the operator interface, is employed for alarm annunciation for all types of alarm signals, distinction shall be achieved visually.

54B.2.10 When a common audible signal, distinct from alarm, is employed for annunciation for all types of trouble and/or supervisory signals, distinction shall be achieved visually.

54B.2.11 A means for silencing a trouble signal sounding appliance shall comply with 57.5 – 57.6.

54B.2.12 Any manual means for resetting the fire alarm control unit shall comply with the following:

- a) Limiting access by being either:
  - 1) Key operated with the key removable only in the normal position;
  - 2) Located within a locked cabinet;
  - 3) Limited by a software security code providing a minimum of 1000 combinations and with a maximum 30-min time-out feature after the last activity; or
  - 4) Arranged to provide equivalent protection against unauthorized use.

54B.2.13 A common limited access means can be used for system reset, alarm signal silence, supervisory signal silence and trouble silence functions.

### **54B.3 Operation of fire alarm system**

54B.3.1 All other BSIU operations outside the scope of this standard shall not impair the required operations of the fire alarm signaling system.

54B.3.2 Short circuits or open circuits in the BSIU equipment or in the wiring between the BSIU equipment and the fire alarm system shall not impede or impair the monitoring for integrity of the interconnected fire alarm system as described in Common Performance and Monitoring for Integrity - Protected-Premises Units/Systems, Section 56, nor impede or impair any fire alarm signal transmissions or operations.

54B.3.3 Single ground faults in the BSIU equipment or in the wiring between the BSIU equipment and the fire alarm system shall not impede or impair the monitoring for integrity of the fire alarm system, or impede or impair any fire alarm, supervisory or trouble signal transmissions or operation.

54B.3.4 Single ground faults shall be reported at the fire alarm control system as trouble signals when they occur on the wiring interconnecting the BSIU equipment with the fire alarm system.

Exception: Where multiple ground faults on the wiring interconnecting the BSIU equipment with the fire alarm system do not impede or impair the monitoring for integrity of the fire alarm system, or impede or impair any fire alarm, supervisory or trouble signal transmissions or operation.

54B.3.5 The required operation of the fire alarm equipment shall not be impaired by any failure of the BSIU equipment hardware, software or circuits, or by any maintenance procedure, including removal or replacement of defective equipment or powering down of the BSIU equipment.

### **54B.4 Combination systems**

54B.4.1 A distinction between signals associated with fire protection and signals of other types, such as burglary or energy management monitoring shall be made.

54B.4.2 In combination systems, fire alarm signals shall be distinctive, clearly recognizable, and shall be indicated as follows in descending order of priority:

- 1) Signals associated with life safety.
- 2) Signals associated with property protection and supervisory signals.
- 3) Trouble signals associated with life safety and/or property protection.
- 4) All other signals.

54B.4.3 The BSIU shall meet the timing requirements in 54B.1.2 and 54B.1.3 during least favorable system loading conditions when the BSIU controls non-life safety building systems such as lighting, access control, security and environmental conditions or other software, such as an internet browsing, is running.

### **54C Installation Information**

54C.1 The installation instructions for the BSIU software shall include the following information:

- a) the minimum system configuration(s) consisting of the following:
  - 1) Operating system and, where applicable, revision level;
  - 2) Microprocessor manufacturer, type(s)/family, and minimum clock speed;
  - 3) Minimum disk storage;
  - 4) Minimum memory requirements;
  - 5) Minimum display requirements;
  - 6) Minimum user interface requirements (such as mouse, keyboard, touch screen, etc.);
  - 7) Required features (such as media needs (DVD, etc.), drivers, etc.);
  - 8) Required input/output functionality (such as serial ports, USB ports, and network cards); and
  - 9) System software release level.
- b) Identify compatible fire alarm control units and mass notification control units to which the BSIU may be interconnected.
- c) Specify that the BSIU is to be located within the same room as the fire alarm control unit to which the BSIU is interconnected where a BSIU provides control of the interconnected fire alarm control unit or suppresses audible change of status notification at the fire alarm control unit.

- d) Specify that the BSIU shall not be permitted to perform fire alarm system control features that cannot be accomplished by the interconnected fire alarm control panel within the same room where a BSIU provides control of the interconnected fire alarm control unit.
- e) Specify that the source of power for the BSIU equipment shall be within the rated range of the BSIU
- f) Specify the BSIU equipment including all peripheral equipment (such as display, keyboard, etc.) shall meet the requirements of the Standard for Information Technology – Safety – Part 1: General Requirements, UL60950-1 or the Standard for Audio/Video Information and Communication Technology Equipment – Part 1: Safety Requirements, UL62368-1.
- g) Specify that the BSIU system is not permitted to initiate and process live voice paging.
- h) Specify that no other software other than the operating system software, anti-virus/security protection software, and other software specified in the installation instructions shall be installed on the BSIU.

(NEW) 96.31 Where BSIU software meets the requirements of section 54A – 54B, the information specified in section 54C shall be included in the installation instructions.

## **2. For Recirculation Review: Class N pathway performance criteria proposal**

3.39A Endpoint (Class N). The end of a pathway where a single addressable device or a control unit is connected...

56.1.14 Pathways designated Class N shall operate as follows:

- a) Two or more pathways where operational capability of the primary pathway and a redundant pathway to each device are verified through end-to-end communication. A loss of intended communications shall result in the annunciation of a trouble signal when two paths/channels are no longer available;  
Exception: When only one endpoint is served, only one pathway is required.
- b) A loss of intended communications between endpoints shall be annunciated as a trouble signal;
- c) A single open, ground, short, or combination of faults on one pathway shall not affect any other pathway;
- d) Conditions that affect the operation of the primary pathway(s) and the redundant pathway(s) shall be annunciated as a trouble signal when the system's minimal operational requirements cannot be met; and
- e) Conditions that affect the intended operation of the required paths are annunciated as a trouble signal.
- f) Operational capability is maintained during the application of a single ground fault.
- g) Non-endpoint devices shall have provisions for connection of at least two separate pathways
- h) Primary and redundant pathways shall not share traffic over the same wire or fiber physical segment;
- i) Where operational capability is to be maintained during a fault, the operational capability shall be restored within 200 s of the application of the fault.

Exception No.1: Requirements (f) shall not apply to non-conductive pathways (e.g. fiber).

~~56.1.14~~ 15 Where two or more fire alarm systems are interconnected, the interconnecting pathways shall be defined by class A, B, N and/or X in the product installation wiring diagram/instructions consistent with the operation of the particular pathway during the specified fault conditions specified in [56.1.8](#), [56.1.9](#), and [56.1.13](#) and [56.1.14](#).

56.3.1 Each notification appliance circuit shall be defined by class A, B, N and/or X in the product installation wiring diagram/instructions consistent with the operation of the particular pathway during the specified fault conditions specified in [56.1.8](#), [56.1.9](#), and [56.1.13](#) and [56.1.14](#).

56.4.1 Each signaling line circuit shall be defined by class A, B, N and/or X in the product installation wiring diagram/instructions consistent with the operation of the particular pathway during the specified fault conditions specified in [56.1.8](#), [56.1.9](#), and [56.1.13](#) and [56.1.14](#).

## **3. For Recirculation Review: Aligning UL 864 with new UL 268 requirements for special application smoke detectors proposal**

67.5.2.4 Detectors that have a special application mode/configuration in accordance with 31.1.1.2 of UL 268 shall comply with normal application requirements wherein the detector or relevant sampling ports of an air sampling detector complies with all applicable requirements defined in UL 268.

67.5.2.5 The alarm and threshold limits determined by the control unit or accessory interconnected to detectors that employ a special application mode/configuration shall be designed and shipped from the factory with the normal application mode/configuration being the default mode of operation.

67.5.2.6 The special application mode/configuration shall not be activated at the control unit/accessory without a deliberate action by the user to initiate the special application mode/ configuration. Deliberate actions include, but are not limited to, selecting the sensitivity consistent with the special application mode/configuration.

67.5.2.7 One of the following means of a visual indication with identifiable markings shall be provided for detectors operating in special application mode:

- a) At the spot-type or air sampling-type detector, or
- b) At the control panel via displayed descriptive information on the specific detector, or
- c) At the relevant sampling ports of the air sampling-type detector.

96.31 The following information shall be included where a control unit/accessory controls or determines the special application mode/configuration sensitivity threshold(s) for smoke detectors in accordance with 67.5.2.4 – 67.5.2.6:

- a) The statement: "Detectors [Sampling ports] set to the special application sensitivity are not suitable for use in areas where cooking appliances may be used. If cooking appliances are used within the protected space, a normal application detector or normal application mode or configuration must be used for that area."
- b) A warning to users that the special application mode of operation is not for general use and may be more prone to false alarms if used in unsuitable environments.
- c) A list of examples of suitable and unsuitable environments for the detector, consistent with the requirements in item (a).  
Exception: This information need not be included when it is provided in the installation instructions of the interconnected smoke detector.
- d) A description of potential nuisance alarm sources.  
Exception: This information need not be included when it is provided in the installation instructions of the interconnected smoke detector.
- e) A description of the method to configure the detector's special application sensitivity.
- f) A description of the method to provide a visual indication with identifiable markings for detectors operating in the special application mode in accordance with 67.5.2.7

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**BSR/UL 1063, Standard for Machine-Tool Wires and Cables****PROPOSAL****Table 8.1****Minimum acceptable average physical properties of PVC insulation and PVC jacket**

Condition of specimens at time of measurement	Minimum acceptable ultimate elongation (1-inch or 25-mm bench marks) - See <u>8.4.2</u>	Minimum acceptable tensile strength - See <u>8.4.2</u>
Unaged	100 percent (1 inch or 25 mm)	1500 lbf/in <sup>2</sup> or 10.3 MPa
Aged in a <del>full-draft circulating air forced air-circulating</del> oven for 168 h at 121.0 ± 1.0°C with nylon jacket of construction B removed	Die-cut specimens: 45 percent of the result with unaged specimens Other specimens: 65 percent of the result with unaged specimens	70 percent of the result with unaged specimens
Specimens (with nylon jacket of construction B in place) from wires or cables NOT marked "oil-resistant II" aged in IRM 902 oil for 96 h at 100.0 ± 1.0°C	50 percent of the result with unaged specimens	50 percent of the result with unaged specimens

9.1.3 A specimen of finished 14, 12, or 10 AWG single-conductor wire of construction B is to be wrapped for four turns around a smooth metal mandrel of a diameter six times that of the specimen. The ends of the specimen are to be secured to the mandrel to result in four complete turns of the specimen being exposed to the air between the securing means. The specimen and mandrel are to be suspended for 24 h in a ~~full-draft circulating air forced air-circulating~~ oven operating at a temperature of 95.0 ± 1.0°C (203.0 ± 1.8°F), after which the specimen and mandrel are to be removed from the oven and cooled for 1 h in a silica-gel desiccator or its equivalent maintained at 24.0 ± 3.0°C (75.2 ± 5.4°F). After cooling, the specimen is to be straightened immediately upon removal from the desiccator and is then to be inspected for surface cracks. Any cracking of the jacket is not acceptable.

14.2 For the Flexibility at room-temperature test, the ~~air-oven forced air-circulating oven~~ aging is to be as indicated in Table 8.1 and the diameter of the mandrel is to be twice the diameter of the specimen for the size 22 – 7 and the 20 – 16 AWG sizes and is to be as indicated in UL 83 for the 14 AWG – 1000 kcmil sizes. For the heat-shock test, the mandrel diameter is to be 0.094 inch or 2.39 mm for the size 22 – 7 and the 20 – 16 AWG sizes and is to be as indicated in UL 83 for the 14 AWG – 1000 kcmil sizes. For the cold-bend test, the mandrel diameter is to be 0.250 inch or 6.35 mm for the size 22 – 7 and the 20 – 16 AWG sizes and is to be as indicated in UL 83 for the 14 AWG – 1000 kcmil sizes.

18.2.1 This test is to be made on two or more specimens of unaged wire at least 24 inches or 610 mm long and on similar specimens of wire that have been aged in a full-draft-circulating-air-forced air-circulating oven for 168 h at  $121.0 \pm 1.0^{\circ}\text{C}$  ( $249.8 \pm 1.8^{\circ}\text{F}$ ). Specimens are to be tested within 16 - 48 h after removal from the oven. A section at least 6 inches or 152 mm long at the center of each specimen is to be wrapped with metal foil, and the wrapped section is to be wound around a metal mandrel with adjacent turns not quite touching (immersion of the specimen on the mandrel in powdered graphite or in water is acceptable in place of the use of foil). The diameter of the mandrel is to be 0.188 inch or 4.78 mm for the size 22 - 7 and the 20 - 16 AWG sizes and is to be as indicated in UL 83 for the 14 AWG - 1000 kcmil sizes. The two ends of the wire are to be twisted together to keep the coiled section from unwinding, and the test voltage is then to be applied between the conductor and the mandrel.

18.3.1 This test is to be made on two or more 30-inch or 762-mm specimens each of unaged wire and wire that has been aged in a full-draft-circulating-air-forced air-circulating oven for 168 h at  $121.0 \pm 1.0^{\circ}\text{C}$  ( $249.8 \pm 1.8^{\circ}\text{F}$ ) and within 16 - 48 h after removal from the oven. A section at least 12 inches or 305 mm long at the center of each specimen is to be wrapped with metal foil or immersed in powdered graphite. The wrapped or immersed section, while being held straight, is then to be maintained at a temperature of  $90.0 \pm 1.0^{\circ}\text{C}$  ( $194.0 \pm 1.8^{\circ}\text{F}$ ) for 1 h, following which the test voltage indicated in Table 18.1 is to be applied as indicated in 18.2.3 and 18.2.4 (except without increasing the voltage to breakdown) between the conductor and the graphite or metal foil while the specimen is still heated.

21.4.1 Finished wire of constructions B (with the nylon jacket left in place) and A shall have an insulation resistance of not less than 0.01 megohm, based on 1000 conductor feet or not less than 0.0030 megohm based on a conductor kilometer, while the wire is maintained continuously at a temperature of  $97.0 \pm 1.0^{\circ}\text{C}$  ( $206.6 \pm 1.8^{\circ}\text{F}$ ) in a full draft circulating-air oven and the resistance is measured after the wire has been in the oven for 24 h and again after 168 h.

26.3 One of the specimens is to be aged in a full-draft-circulating-air-forced air-circulating oven that meets the requirements for the oven described in the test Physical properties (ultimate elongation and tensile strength) in UL 2556 ~~complies with the Standard Test Method for Rubber—Deterioration in an Air Oven, ASTM D573, the Standard Specification for Forced-Convection Laboratory Ovens for Evaluation of Electrical Insulation, ASTM D5423, and the Standard Test Methods for Forced-Convection Laboratory Ovens for Evaluation of Electrical Insulation, ASTM D5374 (100 – 200 fresh-air changes per hour)~~ operating for the time and at the temperature specified for the insulation whose surface is printed and is then to be removed from the oven and kept in still air to cool to room temperature for 60 min before being tested. The one remaining specimen is to rest for at least 24 h in still air at  $23.0 \pm 5.0^{\circ}\text{C}$  ( $73.4 \pm 9.0^{\circ}\text{F}$ ) before being tested.

## BSR/UL 1277, Standard for Electrical Power and Control Tray Cables with Optional Optical-Fiber Members

### PROPOSAL

**Table 22.1**  
**Air temperature for heat shock test**

Jacket material	<del>Air-oven</del> forced air-circulating oven temperature
CPE, PVC, TPU, HDFRPE, LDFRPE	121.0 ±1.0°C (249.8 ±1.8°F)
TPE	150.0 ±1.0°C (302.0 ±1.8°F)
ETFE	180.0 ±1.0°C (365.0 ±1.8°F)
FEP, PFA, PVDF	250.0 ±1.8°C (482.0 ±1.8°F)

22.2 A metal right-circular mandrel is to be used for this test. The mandrel is to have a diameter that is 3 times the outside diameter of finished cable that is 0 - 0.750 inches or 0 - 19.05 mm in calculated overall diameter, 8 times the outside diameter of finished cable that is 0.751 - 1.500 inches or 19.08 - 38.10 mm in calculated overall diameter, and 12 times the outside diameter of finished cable that is over 1.500 inches or 38.10 mm in calculated overall diameter. Four sample lengths of the complete cable are to be used. The diameter of the cable is to be measured by means of a diameter tape. One sample is to be bent for not less than 180° around the mandrel, with the cable in contact with the mandrel throughout the bend. The ends of the cable are to be securely held in place by a means such as friction tape. The assembly of cable and mandrel is to be heated in a ~~full-draft circulating air~~ forced air-circulating oven to the temperature indicated in Table 22.1 for 60 min. The assembly is to be removed from the oven and, while still hot and on the mandrel, the cable is to be examined for cracking of the inner and outer surfaces of the jacket. Cracking of the inner surface can be detected from circumferential depressions in the outer surface of the jacket. The overall jacket is acceptable if, for the first sample, there isn't any evidence of cracking. If the first sample shows any cracking, the test is to be repeated on each of the three remaining samples. The overall jacket is not acceptable if there is evidence of cracking in any of the three additional samples.

## BSR/UL 1651, Standard for Safety for Optical Fiber Cable

### 1 Scope

1.1 These requirements cover single and multiple optical-fiber cables for control, signaling, and communications, rated a minimum of 60°C, as described in Article 770 and other applicable parts of the National Electrical Code (NEC). Cables complying with these requirements are:

*Remainder deleted for brevity*

11.1 Ink printing of the responsible organization and factory identifications required in 15.1(b) and in 15.4 is acceptable on the outer surface of a cable if the printing on each of 2 specimens of the ink-printed jacket remains legible after being rubbed repeatedly with a felt-faced weight as described in Durability of Ink Printing Test, UL 2556 (room temperature aging only). (The aging temperature shall be the same as for the Flexibility Test.)

(NEW)

### **12A Flexibility Test**

12A.1 Aged specimens of optical fiber cable shall not show any cracks on either the inside or outside surface after specimens are wound onto a cylindrical mandrel of the diameter indicated in 12A.2.

12A.2 The specimens that are to be aged in accordance with the test "Conditioning of Specimens," described in UL 2556 for the length of time and at the temperature indicated for the jacket material in the applicable table of physical properties in UL 1581. The conditioning shall be followed by 16 to 96 h of rest in still air at room temperature before the specimens are wound onto a mandrel. The aged specimens shall be wound at room temperature for six complete turns (adjacent turns touching) onto a circular mandrel having a diameter twice that of the diameter over the overall jacket.

Each specimen shall be unwound before being examined.



## BSR/UL 1727, Standard for Commercial Electric Personal Grooming Appliances

### 1. Power Supply Cord Length for Hand Supported Grooming Appliances

#### PROPOSAL

Table 16.6

#### Cord lengths for specific conditions

Type of appliance	Cord length			
	Minimum, feet	(m)	Maximum, feet	(m)
Appliance supported by table or counter top	5	(1.52)	8	(2.44)
Wall-hung appliance with attached appliance supported by hand	10 <sup>a</sup>	(3.05)	12 <sup>a</sup>	(3.66)
	2 <sup>b</sup>	(0.61)	3 <sup>b</sup>	(0.91)
Appliance usually supported by hand	10 <sup>c</sup>	(2.74 3.05)	12	(3.66)
Hair dryer, floor-supported	3 <sup>c</sup>	(0.91)	9	(2.74)
All appliances not covered above	6	(1.83)	8	(2.44)
<sup>a</sup> Between wall unit and hand unit.				
<sup>b</sup> Between wall unit and receptacle.				
<sup>c</sup> If the cord entry point is higher than 2 feet (0.61 m) above the floor, one additional foot (0.3 m) is to be added to the minimum cord length for each additional foot that the cord entry point is located above the floor, or fraction thereof, up to a maximum cord length of 6 feet (1.83 m).				

### 2. Withdrawal and replacement of 508C with UL 61800-5-1

#### PROPOSAL

39.3.10 Electronically protected motor circuits shall comply with one of the following:

- a) The Standard for Tests for Safety-Related Controls Employing Solid-State Devices, UL 991. When the protective electronic circuit is relying upon software as a protective component, it shall comply with the requirements in the Standard for Software in Programmable Components, UL 1998. If software is relied upon to perform a safety function, it shall be considered software Class 1;

b) The Standard for Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements, UL 60730-1. If software is relied upon to perform a safety function, it shall be considered software Class B; or

c) ~~The Standard for Power Conversion Equipment, UL 508C~~ Standard for Adjustable Speed Electrical Power Drive Systems - Part 5-1: Safety Requirements - Electrical, Thermal and Energy, UL 61800-5-1.

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## BSR/UL 4200A, Standard for Safety for Products Incorporating Button or Coin Cell Batteries of Lithium Technologies

### 1. *Proposal to update construction requirements of battery compartments*

5.5 Products that locate removable or replaceable button/coin cell batteries inside a battery compartment shall be designed to prevent children from removing the battery by one of the following methods in (a) or (b) below. Compliance is checked by the tests of Section 6.

- a) A tool, such as a screwdriver or coin, is required to open the battery compartment. For a battery compartment secured by a screw or a twist-on access cover, in which case a minimum torque of 0.5 Nm and a minimum angle of 90 degrees of rotation shall be required to open the compartment or the fastener shall engage a minimum of two full threads; or
- b) The battery compartment door or cover requires the application of a minimum of two independent and simultaneous movements to open by hand.

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## BSR/UL 61730-1, Standard for Safety for Photovoltaic (PV) Module Safety Qualification - Part 1: Requirements For Construction

1. Revision to a US National Difference to Accept Mounting and Grounding Means Complying with the Standard for Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels, UL 2703.

### 5.2.3DV D2 Modification of 5.2.3 in accordance with the following:

- Add the following new paragraph at the end of the first paragraph: "The module is considered to be in compliance with this standard only when the module is either mounted in the manner specified by the mounting instructions, or when the mounting means has been evaluated with this PV module to UL 2703. A module with exposed conductive parts is considered to be in compliance with this standard only when it is either electrically grounded in accordance with the manufacturer's instructions and the requirements of the National Electrical Code, ANSI/NFPA 70 (2014-2017), or when the bonding means has been evaluated with this PV module to UL 2703."

- Add the following note after the phrase "The electrical documentation shall include a detailed description of the electrical insulation wiring method to be used. This description shall include:" NOTE - The first, third and fourth items in this list refer to modules with a wiring compartment intended for use with field-installed wiring.

- Replace the sixth bullet about bonding with the following: "the bonding and grounding method(s) to be used (if applicable) shall be specified. All provided or specified hardware shall be identified in the documentation;"

- Replace the seventh bullet about the documentation for by-pass diodes with the following: "the type and rating of bypass-diodes to be used as well as the installation instructions for those diodes (if applicable)."

2. Revision to the Static Mechanical Load Requirements to Clause 3, Terms and definitions, and Clause 5, Markings.

### 3.3.7DV D2 Addition of the following definition:

#### Reduced mechanical load

mechanical load with a minimum test load of 1 200 Pa (MST 34) for use at particular ground-mounted PV power generation plants with restricted access.

NOTE The term PV power generation plant is defined in IEC 60364-7-712 and is conceptually similar to the Large-Scale Photovoltaic (PV) Electric Power Production Facility as defined in the National Electrical Code, ANSI/NFPA 70 (2017), article 691. Such plants require restricted access, are operated under daily supervision and maintained by qualified personnel, have a capacity greater than 5 MW, specifically designed for the site conditions considering equipment and approved by a licensed professional engineer competent in the specific area under supervision.

## 5.2.2 Marking

### 5.2.2.1 General

#### 5.2.2.1DV.3 Add the following below item (b):

Type or model number designation for modules with reduced mechanical load shall be identified by a unique model number on nameplate and documentation.

#### 5.2.2.1DV.4 Add the following item (I):

I) Modules for reduced mechanical load shall be marked by “Reduced mechanical design load” on nameplate followed by the range of positive and negative design loads they are designed for. Then the sentence “May only be used in ground-mounted PV power generation plants designed by a licensed professional engineer competent in the specific area under supervision in accordance with requirements in the installation manual.” or similar equivalent warning shall be added.

EXAMPLE “Reduced mechanical design load  $\pm$  800 Pa. May only be used in ground-mounted PV power generation plants designed by a licensed professional engineer competent in the specific area under supervision in accordance with requirements in the installation manual.”

NOTE One module construction may be designed for multiple design loads based on mounting configurations.

### 5.2.3 Documentation

#### *5.2.3DV D2 Modification of 5.2.3 in accordance with the following:*

- Add the following new paragraph at the end of the first paragraph: "The module is considered to be in compliance with this standard only when the module is mounted in the manner specified by the mounting instructions. A module with exposed conductive parts is considered to be in compliance with this standard only when it is electrically grounded in accordance with the manufacturer's instructions and the requirements of the National Electrical Code, ANSI/NFPA 70 (2014-2017)."
- Add the following note after the phrase “The electrical documentation shall include a detailed description of the electrical insulation wiring method to be used. This description shall include:” NOTE - The first, third and fourth items in this list refer to modules with a wiring compartment intended for use with field-installed wiring.
- Replace the sixth bullet about bonding with the following: “the bonding and grounding method(s) to be used (if applicable) shall be specified. All provided or specified hardware shall be identified in the documentation;”
- Replace the seventh bullet about the documentation for by-pass diodes with the following: "the type and rating of bypass-diodes to be used as well as the installation instructions for those diodes (if applicable)."
- Add the following bullets after the seventeenth bullet:
  - a statement indicating the minimum mechanical means for securing the PV module (as evaluated during the mechanical load test (MST 34));
  - the documentation of modules with reduced mechanical load shall contain:

“When PV modules are intended to be installed in an engineered scenario

by qualified personnel such as in a ground-mounted PV power generation plant, they may be designed to meet a lower minimum test load of 1 200 Pa with a safety factor of 1,5: i.e. an 800 Pa minimum design load for the down pressures (positive) and uplift pressures (negative). These modules are marked by “Reduced mechanical design load” on the nameplate followed by the range of positive and negative design loads they are designed for.

As an example, these modules may be used in interior or exterior rows where the module mounting and structure in combination are designed to meet a specific design load lower than 1 600 Pa and a licensed professional engineer has taken into consideration all factors below for the combined site specific wind and snow loads.

1. Pressure coefficients should be derived based on an effective wind area equal to one PV module, from boundary layer wind tunnel tests on the specific mounting system used to support the PV module.
2. Boundary layer wind tunnel tests should be conducted in accordance with ASCE 7 and ASCE 49, or other recognized industry guidance;
3. Mounting system vibrations with natural frequencies less than 10 Hz may result in loads higher than predicted from static load calculations, depending on wind speed and damping ratio of the vibration mode, and should be considered to assess dynamic amplification factors;
4. Some mounting systems may be susceptible to instabilities due to vortex shedding which may not be addressed in building codes; guidance from qualified experts in boundary layer wind tunnel testing of ground-mounted PV systems may be required to address this risk;
5. Modules when mounted on trackers that rely on being operational or stowing at a specified angle in extreme wind or snow conditions should be verified to limit loads below the design load threshold considering the design controls implemented in such trackers.

Alternatively, modules having a higher minimum design load compatible to the required site-specific loads may be used. Reduced mechanical load modules cannot be used on a rooftop system.”

- Reduced mechanical load modules shall not be used on a rooftop system.

NOTE Per the prevailing local codes many large photovoltaic installations of today are designed, engineered and installed by qualified experts in their structural, mechanical and electrical field. To target specific zones in the array to handle higher loading than in interior areas structure designers utilize boundary layer wind tunnel studies of that specific structure per allowances in building codes to utilize such studies. In the overall system design approach the boundary later studies, manufacturer’s mounting configurations, stated design loads and test safety factors are utilized.

## BSR/UL 61730-2, Standard for Safety for Photovoltaic (PV) Module Safety Qualification - Part 2: Requirements For Testing

1. Revision to the Static Mechanical Load Test, MST 24, in Clause 10.23.

### 10.23 Static mechanical load test MST 34

10.23DV D2 Modification by replacing Clause 10.23 with the following:

This test is equivalent to MQT 16 in IEC 61215-2 except Clause 4.16.1, Purpose, shall be replaced by the following:

#### 10.23DV.1 Purpose

This test defines the ability of photovoltaic modules to withstand static load stresses. Among other factors the construction of mounting means, applicable standards, building codes, probability of event occurrence and design assumptions define the minimum required design load for a particular site. Location, climate and application might require higher sampling rates and other safety factors  $\gamma_m$ .

Test-to-fail of a construction, for instance in order to determine the maximum possible test load, is not part of this standard.

Test load definition: Test load =  $\gamma_m \times$  design load, with a safety factor  $\gamma_m \geq 1.5$ .

The nameplate marking defines the minimum required design load. Modules without nameplate marking require a minimum design load of 1 600 Pa. This results in a minimum test load of 2 400 Pa. Modules with reduced mechanical load require a minimum design load of 800 Pa specified on the nameplate and documentation. This results in a minimum test load of 1 200 Pa.

NOTE 1 Above specified loads exclude module dead loads, mounting means dead load and underlying structure which nevertheless are factored into mounting structure design calculations. Whereas the module dead load is implicit in the mechanical load test it should be omitted from the above design load which is the total sum of environmental loads. Most building codes use a similar or even lower safety factor.  $\gamma_m$  is not intended to be used in addition to the already applied building code safety factor.

NOTE 2 PV modules may be tested to test loads of 2 400 Pa and 5 400 Pa where additional requirements, such as heavy snow loads, apply for certain installations and climates. Alternate mounting locations and/or configurations, or additional clamps may be required for such higher loads as identified by the module manufacturer in the application documentation. The system designer or installer is responsible for ensuring the module static loads and safety factors are appropriate for the site as per the applicable building code and relevant wind tunnel derived coefficients for the mounting structure.

A higher safety factor  $\gamma_m$  and also higher design load(s) for positive (downward) and negative (upward) may be specified may the manufacturer for certain applications. The documentation shall specify design load(s) and safety factor  $\gamma_m$  for each mounting method.

Example: Design loads as specified by the manufacturer: 3 800 Pa (positive); 2 200 Pa (negative);  $\gamma_m = 1.5$

Test loads: 5 700 Pa (positive) 3 cycles; 3 300 Pa (negative) 3 cycles

Table 10.23DV.1.1 provides test load examples for different applications



**Table 10.23DV.1.1 - Test load examples for different applications**

<u>Static Mechanical Load Category</u>	<u>Test Load [Pa]</u>	<u>Severity of snow and wind application</u>	<u>Description</u>
<u>Reduced</u>	<u><math>1\,200 \leq \text{Test Load} &lt; 2\,400</math></u>	<u>Low</u>	<u>Licensed professional engineers competent in the specific area under supervision assure compliance to relevant building codes and product installation manuals. Limited to ground-mounted PV power generation plants where climate and/or application allows use.</u>
<u>Default</u>	<u>2 400</u>	<u>Moderate</u>	<u>Due diligence whether the load is sufficient is needed for all installations. Residential applications typically use this category.</u>
<u>Increased</u>	<u><math>&gt; 2\,400</math></u>	<u>High</u>	<u>Structural engineers calculate minimum required loads. Higher snow load or wind load regions and/or applications require the module to be mechanically stronger.</u>

**NOTE** Only uniform loads are covered by this test. A standard for non-uniform snow loads IEC 62938 is under development. A standard for un-balanced wind loads is under consideration.

2. Revisions to the Reverse Current Overload Test, MST 26, in Section 10.20.

## 10.20 Reverse current overload test MST 26

### 10.20.2 Procedure

**10.20.2DV D2 Modification by replacing Clause 10.20.2 with the following:**

The PV module under test is to be installed with the front side facing down. The minimum distance of this front side to the surface below shall be determined by the manufacturer's documentation. If the documentation contains multiple mounting alternatives the one with the shortest clearance shall be utilized for the test. The sample front side is to be mounted in direct contact to a solid support if one of the documentation alternatives is direct mounting to surfaces or if no minimum clearance is defined therein. The supporting surface shall be of material that does not deform under hot temperatures. The thermal conductivity of the support shall be not higher than 0,5 W/(m•K).

The ambient air temperature for the test shall be  $20 \pm 5$  °C. The ambient air of the test environment shall be still with no forced circulation. The test shall be conducted in an area free of drafts (see IEC 60695-2-10 for comparable requirements).

The irradiance on the cell area of the PV module shall be less than 50 W/m<sup>2</sup>. In case there is a possible contribution to the photocurrent of the PV module (e.g. through a transparent back side or a bifacial cell concept) this shall be ensured through a dark environment. An additional shading cover to the back is not allowed since it would influence the thermal insulation.



Any blocking diode (not bypass diodes) provided shall be defeated (short-circuited). A laboratory DC power supply shall be connected to the PV module with positive output connected to the positive terminal of the PV module. The applied reverse current ( $I_{TEST}$ ) shall be equal to 135 % of the PV module's maximum overcurrent protection rating, as provided by the manufacturer. The test supply current should be limited to the value of  $I_{TEST}$ , and the test supply voltage shall be increased to cause the reverse current to flow through the PV module. The hottest point(s) shall be determined after 1 h, for instance by infrared camera. When the hottest point(s) are determined and tagged the current shall be turned off allowing the sample to cool down to room temperature. After that (a) thermocouple(s) shall be attached to this point(s) by means compatible with the highest temperatures allowed. Suitable thermocouple types for the maximum permitted temperature shall be used. Such thermocouples are for instance types T, K and E of IEC 60584, the standard for thermocouples. The sample shall be reheated by applying a reverse current equal to  $I_{TEST}$  for 2 h, or until final results are known per Pass criteria below, whichever takes place first.

At the end of the test the temperature(s) measured by the thermocouple(s) shall be recorded.

Throughout the test the current flow shall be kept stable within  $\pm 2\%$  (this may require the voltage to be adjusted).

The maximum over-current protection rating of a PV module can be interpreted as the PV module series fuse rating. A series fuse may be required in the installation of PV arrays. According to UL 61730-1 the maximum over-current rating has to be provided by the manufacturer.

NOTE 1 A method to determine the PV module's limiting reverse current  $I_R$  capacity can be found in EN 50380:2003.

NOTE 2 As guidance on the use of IR-cameras the Technical Specification for "Photovoltaic (PV) systems – Requirements for testing, documentation and maintenance – Part 3: Photovoltaic modules and plants – Outdoor infrared thermography", IEC TS 62446-3, may be used.

NOTE 3 As guideline for PV module temperature measurement for performance measurements or for monitoring, Annex B of UL 61724-1, may be used. Fixation of thermocouples per this reference is suggested. Ordinary tape is not likely a candidate for such an attachment means.

### 10.20.3 Pass criteria

10.20.3DV D2 Modification by replacing Clause 10.20.3 with the following:

The pass criteria are as follows:

- a) There shall not be flaming of the PV module or any of its components.
- b) MST 01 shall meet the same requirements as for the initial measurements.
- c) MST 16 shall meet the same requirements as for the initial measurements.
- d) MST 17 shall meet the same requirements as for the initial measurements.
- e) The highest measured surface temperature during the test shall be below or equal to 150°C.

## 3. Clarification to Equipotential Bonding Test.

**DVA.6 Continuity test of equipotential bonding**

All PV modules provided with a connection for equipotential bonding are subjected to a continuity test for equipotential bonding (MST 13). At a sampling rate of 400% 1 PV module per framing station per working shift demonstrate the electrical continuity between the grounding connection and all accessible conductive parts shall be measured. Any appropriate indication device is able to be employed (current supply in conjunction with current and voltage measurement).

PV modules that have no frames or equipotential bonding locations identified shall be exempt from this requirement.

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