



**Summary of Substantive Changes
between the 2014 and the 2013 editions of
NSF/ANSI 50, “Equipment for Swimming Pools, Spas, Hot Tubs
and other Recreational Water Facilities”**

Presented to the IAPMO Standards Review Committee on October 3, 2016

General: The changes to this standard may impact the following currently listed products: ozone units, UV light units, in-line electrolytic chlorinator or brominator units, (batch) type electrolytic chlorine or bromine generator units, and copper/silver and copper ion generator units.

The substantive changes are:

- Clarification made to the ozone unit that is to be evaluated after the life test. (see Section 13.18).
- Clarification required in installation instructions that will state flow rate and daily operation time for ozone units not intended for continuous use. (see Section 13.21).
- Added requirement of daily operation time onto ozone unit’s Data plate if unit not intended for continuous use. (see Section 13.23).
- Clarification required in installation instructions that will state daily operation time for UV light units not intended for continuous use. (see Section 14.61).
- Added requirement of daily operation time onto UV light unit’s Data plate if unit not intended for continuous use. (see Section 14.7).
- Clarification made to the UV light unit that is to be evaluated after the life test. (see Section 14.12).
- Clarification required in installation instructions that will state flow rate and daily operation time for in-line electrolytic chlorinator or brominator units not intended for continuous use. (see Section 15.6).
- Added requirement of flow rate and daily operation time onto in-line electrolytic chlorinator or brominator unit’s Data plate if unit not intended for continuous use. (see Section 15.7).
- Clarification made to the in-line electrolytic chlorinator or brominator unit that is to be evaluated after the life test. (see Section 15.15).
- Clarification required in installation instructions that will state flow rate and daily operation time for brine (batch) type electrolytic chlorine or bromine generator units not intended for continuous use. (see Section 16.6).
- Added requirement of flow rate and daily operation time onto brine (batch) type electrolytic chlorine or bromine generator unit’s Data plate if unit not intended for continuous use. (see Section 16.7).
- Deletion of section 16.8 ‘Disinfection efficacy’ since chlorinators are not supplemental disinfection.
- Clarification made to the brine (batch) type electrolytic chlorine or bromine generator unit that is to be evaluated after the life test. (see Section 16.15).
- Clarification required in installation instructions that will state flow rate and daily operation time for copper/silver and copper ion generator units not intended for continuous use. (see Section 17.6).
- Added requirement of daily operation time onto copper/silver and copper ion generator unit’s Data plate if unit not intended for continuous use. (see Section 17.7).



- Clarification made to the copper/silver and copper ion generator unit that is to be evaluated after the life test. (see Section 17.14).
- Deletion of Note 1 and Note 2 in section I.3 of Annex I to make water temperature consistent with Section 14, Life Test. (see Section I.3 of Annex I).
- Clarification added for testing those products not intended for continuous operation. (see Section I.4 and Section I.5 of Annex I).

13 Ozone generation process equipment

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13.18 Life test

When tested in accordance with the life test described in Annex I, a minimum of 8000 operating hours shall be accumulated among the three units; no less than 3000 operating hours shall be accumulated on one of the three units. At the conclusion of the testing, the units with 3000 operating hours shall be evaluated to the ~~perform as intended by the manufacturer to the~~ output, pressure, and disinfection efficacy requirements of this section.

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13.21 Operation and installation instructions

Drawings and a parts list for easy identification and ordering of replacement parts shall be furnished with each unit and shall include:

- model number of the unit;
- instructions for proper size selection and installation;
- operation and maintenance instructions;
- a statement of the manufacturer's warranty;
- applicable caution statements (prominently displayed);
- ventilation requirements (if applicable);
- cross connection protection (if the unit is physically connected to a potable water supply); and
- a warning, if the potential exists for release of high dosages of substances that may endanger bathers; – output rate (in lbs or kg per day or hour);
- maximum daily operation time (if not designed for continuous operation); and
- level of disinfection efficacy.

13.22 Information shall be provided to the user concerning the potential for off gassing of ozone and required ozone removal devices, if applicable.

13.23 Data plate

Data plate(s) shall be permanent; easy to read; and securely attached, cast, or stamped onto the unit at a location readily accessible after normal installation. Data plate(s) shall contain the following:

- manufacturer's name and contact information (address, or phone number, or website, or prime supplier)
- model number;
- serial number or date of manufacture;
- certification mark of the ANSI-Accredited testing and certification organization;



- electrical requirements (volts, amps, hertz) for operation;
- type of feed-gas;
- rated feed-gas flow rate (SCFH and/or LPM);
- rated ozone production (grams/hour and/or lb/day);
- method of cooling and coolant flow rates;
- level of disinfection certification (Level 1 or Level 2);
- [maximum daily operation time \(if not designed for continuous operation\)](#); and
- caution statements (prominently displayed) including a statement that the unit is designed for secondary disinfection and should be used with an EPA registered disinfecting chemical to impart a measurable residual concentration in the water.

14 Ultraviolet (UV) light process equipment

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14.6 Operation and installation instructions

14.6.1 Drawings and a parts list for easy identification and ordering of replacement parts shall be furnished with each unit and shall include:

- model number of the unit;
- instructions for proper size selection and installation;
- operation and maintenance instructions;
- a statement of the manufacturer's warranty;
- applicable caution statements (prominently displayed);
- ventilation requirements (if applicable);
- cross connection protection (if the unit is physically connected to a potable water supply);
- [maximum daily operation time \(if not designed for continuous operation\)](#); and
- a warning, if the potential exists for release of high dosages of substances that may endanger bathers.

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14.7 Data plate

Data plate shall be permanent; easy to read; and securely attached, cast, or stamped onto the unit at a location readily accessible after normal installation. Data plate(s) shall contain the following:

- equipment name and function(s);
- manufacturer's name and contact information (address, phone number, website, or prime supplier);
- model number designation;
- electrical requirements for operational volts, amps, and Hertz of the unit;
- serial number or year of construction;
- maximum rated operating pressure in kPa (psi);
- prominently displayed caution statement: "UV light is harmful to eyes and exposed skin; turn off electrical supply before opening unit.";
- caution statement that the unit is designed for supplemental disinfection and should be used with registered or approved disinfection chemicals to impart required residual concentrations;
- model and number of UV lamp(s);
- [maximum daily operation time \(if not designed for continuous operation\)](#); and
- maximum design flow rate in gallons/minute (liters/minute).

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14.12 Life Test



When tested in accordance with the life test described in Annex I, a minimum of 8000 operating hours shall be accumulated among the three units; no less than 3000 operating hours shall be accumulated on one of the three units. At the conclusion of the testing, the units with 3000 operating hours shall be evaluated to the ~~perform as intended by the manufacturer to the~~ output, pressure, and disinfection efficacy requirements of this section.

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15 In-line electrolytic chlorinator or brominator process equipment

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15.6 Operation and installation instructions

Drawings and a parts list for easy identification and ordering of replacement parts shall be furnished with each unit and shall include:

- model number of the unit;
- instructions for proper size selection and installation;
- operation and maintenance instructions;
- a statement of the manufacturer's warranty;
- applicable caution statements (prominently displayed);
- ventilation requirements (if applicable);
- cross connection protection (if the unit is physically connected to a potable water supply);
- output rate (in lbs or kg per day or hour);
- maximum daily operation time (if not designed for continuous operation); and
- a warning, if the potential exists for release of high dosages of substances that may endanger bathers.

15.7 Data plate

Data plate shall be permanent; easy to read; and securely attached, cast, or stamped onto the unit at a location readily accessible after normal installation. Data plate(s) shall contain at least the following:

- equipment name;
- manufacturer's name and contact information (address, phone number, website, or prime supplier);
- model number;
- electrical requirements – volts, amps and hHertz;
- serial number and/or date of manufacture;
- caution statements (prominently displayed);
- ~~capacity or~~ output rate (lbs or kg / day or hour);
- maximum daily operation time (if not designed for continuous operation); and
- salt concentration range.

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15.15 Life test

When tested in accordance with the life test described in Annex I, a minimum of 8000 operating hours shall be accumulated among the three units; no less than 3000 operating hours shall be accumulated on one of the three units. At the conclusion of the testing, the units with 3000 operating hours shall be evaluated to the ~~perform as intended by the manufacturer to the~~ output, pressure, and disinfection efficacy requirements of this section.

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16 Brine (batch) type electrolytic chlorine or bromine generators

16.6 Operation and installation instructions

Drawings and a parts list for easy identification and ordering of replacement parts shall be furnished with each unit and shall include:

- model number of the unit;
- instructions for proper size selection and installation;
- operation and maintenance instructions;
- a statement of the manufacturer's warranty;
- applicable caution statements (prominently displayed);
- ventilation requirements (if applicable);
- cross connection protection (if the unit is physically connected to a potable water supply);
- output rate (in lbs or kg per day or hour);
- maximum daily operation time (if not designed for continuous operation); and
- a warning, if the potential exists for release of high dosages of substances that may endanger bathers.

16.7 Data plate

Data plate shall be permanent; easy to read; and securely attached, cast, or stamped onto the unit at a location readily accessible after normal installation. Data plate(s) shall contain at least the following:

- equipment name;
- manufacturer's name and contact information (address, phone number, website, or prime supplier);
- model number;
- electrical requirements;
- serial number and/or date of manufacture;
- ~~capacity or~~ output rate (lbs or kg / day or hour);
- maximum daily operation time (if not designed for continuous operation).

16.8 Disinfection efficacy

Process equipment designed for supplemental disinfection shall demonstrate a 3-log reduction of influent bacteria when tested according to Annex H.

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16.15 Life test

When tested in accordance with the life test described in Annex I, a minimum of 8000 operating hours shall be accumulated among the three units; no less than 3000 operating hours shall be accumulated on one of the three units. At the conclusion of the testing, the units with 3000 operating hours shall be evaluated to the ~~perform as intended by the manufacturer to the~~ output, pressure, and disinfection efficacy requirements of this section.

17 Copper/silver and copper ion generators

17.1 General

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17.6 Operation and installation instructions



17.6.1 Drawings and a parts list for easy identification and ordering of replacement parts shall be furnished with each unit and shall include:

- model number of the unit;
- instructions for proper size selection and installation;
- operation and maintenance instructions;
- a statement of the manufacturer's warranty;
- applicable caution statements (prominently displayed);
- ventilation requirements (if applicable);
- cross connection protection (if the unit is physically connected to a potable water supply);
- output rate (amount of Cu per unit time);
- maximum daily operation time (if not designed for continuous operation); and – a warning, if the potential exists for release of high dosages of substances that may endanger bathers.

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17.7 Data plate

Data plate shall be permanent; easy to read; and securely attached, cast, or stamped onto the unit at a location readily accessible after normal installation. Data plate(s) shall contain at least the following:

- equipment name;
- manufacturer's name and contact information (address, phone number, website, or prime supplier);
- model number;
- electrical requirements – volts, amps, and Hertz (if applicable);
- serial number and/or date of manufacture;
- caution statements referring user to operation manual for applicable warnings (prominently displayed) including a caution statement that the unit is designed for supplemental disinfection and should be used with registered or approved disinfection chemicals to impart required residual concentrations;
- ~~capacity (pool volume) or~~ output rate (in cu/time amount of copper per time at each setting); and
- maximum daily operation time (if not designed for continuous operation).

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17.14 Life test

When tested in accordance with the life test described in Annex I, minimum of 8000 operating hours shall be accumulated among the three units; no less than 3000 operating hours shall be accumulated on one of the three units. At the conclusion of the testing, the units with 3000 operating hours shall be evaluated to the perform-as-intended-by-the-manufacturer-to-the output, pressure, and operational protection disinfection efficacy requirements of this section.

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Annex I (Normative) Life test

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I.3 Water temperature



	swimming pools	hot tubs / spas
water temperature	75 ± 10 °F (24 ± 6 °C)	102 ± 5 °F (39 ± 3 °C)

NOTE 1 — All feeders, except those labeled to be for swimming pools only, shall be tested at the spa/hot tub water temperature.

NOTE 2 — If scientific evidence exist that temperature may affect the efficacy of a technology, the worse-case scenario shall be used.

I.4 Method

- a) Assemble three units according to the manufacturer's instructions.
- b) Connect the units to a re-circulating tank filled with water conditioned to the applicable temperatures specified in Annex I, section I.1.3. *Adjust the pressure source to obtain a pressure that is 80 ± 0.5% of the maximum rated pressure. Set the output rate to deliver a minimum of 80% of the rated output specified by the manufacturer.*
- c) Start the units and allow them to operate per manufacturer's instructions continually for a period of 3000 h.
 - i) Units that are not designed for continuous operation shall be set at the maximum allowable daily operation time. The total test period shall remain 3000 hours. If the output is also variable in addition to the daily operation time, it shall be set to the level specified in (c)*
 - d) Maintain the units in accordance with the manufacturer's maintenance instructions. Manufacture shall not specify parts replacement as maintenance within 3000 h.*

I.56 Acceptance criteria

Units designed for continuous operation:

At least one of the three units shall complete 3000 satisfactory operating hours, and a minimum of 8000 satisfactory operating hours shall be accumulated among the three units. At the conclusion of the testing, the units with 3000 operating hours shall be evaluated *perform as intended by the manufacturer and shall continue to conform* to the applicable performance requirements as specified in the products life test section.

Units not designed for continuous operation:

At least one of the three units shall complete 3000 total elapsed hours, during which the daily operation time is set to the maximum level. A minimum of 8000 total elapsed hours shall be accumulated among the three units, during which the daily operation time is set to the maximum level. At the conclusion of the testing, the unit with 3000 operating hours shall be evaluated to the applicable performance requirements as specified in the products life test section.