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Portable Electric Spas and Battery Charger Systems
Appliance Efficiency Rulemaking
June 2018

California Code of Regulations
Title 20. Public Utilities and Energy
Division 2. State Energy Resources Conservation and Development Commission
Chapter 4. Energy Conservation
Article 4. Appliance Efficiency Regulations

§ 1602. Definitions.

...[skipping (a) through (f)]

(g) Pool Heaters, Portable Electric Spas, Residential Pool Pump and Motor Combinations, and Replacement Residential Pool Pump Motors.

...[skipping “Capacitor start-capacitor run” through “Coefficient of performance (COP)”]

“Combination spa” means a portable electric spa with two separate distinct reservoirs, where (1) one reservoir is an exercise spa; (2) the second reservoir is a standard spa; and (3) each reservoir has an independent water temperature setting control.

...[skipping “Default speed” and “Electronically commutated motor (ECM)”]

“Exercise spa” (also known as a “swim spa”) means a portable electric spa that includes specific features and equipment to produce water flow for water physical therapy or physical fitness activity, including, but not limited to, swimming in place.

“Exercise spa portion” means the reservoir of a combination spa that is an exercise spa.

“Fill volume” means the water capacity of the portable electric spa, in gallons, at the halfway point between the bottom of the skimmer opening and the top of the skimmer opening. In the absence of a skimmer, the fill volume is six inches below the overflow level of the spa as defined in the test method in section 1604(g)(2)(B)1.

...[skipping “Heat pump pool heater”]

“Inflatable spa” means a portable electric spa where the structure is collapsible and is designed to be filled with air to form the body of the spa.

...[skipping “Low temperature rating” through “Pool pump motor capacity”]

“Portable electric spa” means a factory-built electric spa or hot tub, supplied with equipment for heating and circulating water at the time of sale or sold separately for subsequent attachment.

“Rated capacity” of a portable electric spa means the number of people capable of fitting in a portable electric spa as specified by the manufacturer.

“Rated voltage” of a portable electric spa means the voltage, in volts, as it appears on the nameplate of the spa.

“Rated volume” means the water capacity of a portable electric spa, in gallons, as specified by the manufacturer on the spa, on the spa packaging, or the spa marketing materials.

...[skipping “Readily accessible on-off switch” through “Service factor (of an AC motor)”]

“Skimmer” means a suction opening intended to remove floating debris from the water surface and installed where part of the water intake opening is open to atmospheric pressure.

...[skipping “Spa conditions rating”]

~~“Spa volume” means the actual fill volume of the spa, under normal use, in gallons, as defined in the test method in Section 1604(g)(2)(B).~~

...[skipping “Speed” and “Split phase start”]

“Standard spa” means a portable electric spa that is not an inflatable spa, an exercise spa, or the exercise spa portion of a combination spa.

“Standard spa portion” means the reservoir of a combination spa that is a standard spa.

...[skipping “Standard temperature rating”]

“Standby mode” of a portable electric spa means that only the default settings as shipped by the manufacturer are enabled, except water temperature, which may be adjusted to meet the test conditions. No manual operations are enabled.

...[skipping “Thermal efficiency” through end of 1602]

Note: Authority cited: Sections 25213, 25218(e), 25402(a)-25402(c) and 25960, Public Resources Code; and sections 16, 26 and 30, Governor's Exec. Order No. B-29-15 (April 1, 2015). Reference: Sections 25216.5(d), 25402(a)-25402(c), 25402.5.4 and 25960, Public Resources Code; and section 16, Governor's Exec. Order No. B-29-15 (April 1, 2015).

§ 1604. Test Methods for Specific Appliances.

...[skipping (a) through (f)]

(g) Pool Heaters, Portable Electric Spas, Residential Pool Pump and Motor Combinations, and Replacement Residential Pool Pump Motors.

...[skipping (1)]

(2) Test Method for Portable Electric Spas.

(A) The test method for portable electric spas manufactured on or after January 1, 2006, and before June 1, 2019, is as follows:

1. ~~(A)~~ Minimum continuous testing time shall be 72 hours.
2. ~~(B)~~ The spa shall be filled with water to the halfway point between the bottom of the skimmer basket opening and the top of the spa. If there is no skimmer basket, the spa shall be filled with water to six inches below the top of the spa.
3. ~~(C)~~ The water temperature shall be 102°F, ± 2°F for the duration of the test.
4. ~~(D)~~ The ambient air temperature shall be 60°F, ± 3°F for the duration of the test.
5. ~~(E)~~ The standard cover that comes with the unit shall be used during the test.
6. ~~(F)~~ The test shall start when the water temperature has been at 102°F, ± 2°F for at least four hours.
7. ~~(G)~~ Record the total energy use for the period of test, starting at the end of the first heating cycle after the stabilization period specified in Section 1604(g)(2)(~~A~~)6, and finishing at the end of the first heating cycle after 72 hours has elapsed.
8. ~~(H)~~ The unit shall remain covered and in the default operation mode during the test. Energy-conserving circulation functions, if present, must not be enabled if not appropriate for continuous, long-term use. Ancillary equipment including, but not limited to lights, audio systems, and water treatment devices, shall remain connected to the mains but may be turned off during the test if their controls are user accessible.
9. ~~(I)~~ The measured standby power shall be normalized to a temperature difference of 37°F using the equation,

$$P_{\text{norm}} = P_{\text{meas}} \frac{\Delta T_{\text{ideal}}}{\Delta T_{\text{meas}}}$$

Where:

P_{meas} = measured standby power during test (E/t)

ΔT_{ideal} = 37°F

ΔT_{meas} = $T_{\text{water avg}} - T_{\text{air avg}}$

$T_{\text{water avg}}$ = Average water temperature during test

$T_{\text{air avg}}$ = Average air temperature during test.

10. (F) Data reported shall include: spa identification (make, model, S/N, specifications); volume of the unit in gallons; supply voltage; minimum, maximum, and average water temperatures during test; minimum, maximum, and average ambient air temperatures during test; date of test; length of test (t, in hours); total energy use during the test (E, in Wh); and normalized standby power (P_{norm} , in watts).

(B) The test method for portable electric spas manufactured on or after June 1, 2019, is ANSI/APSP/ICC-14 2014, excluding section 8.2, and with the following modifications:

1. All portable electric spas shall be filled with water to the halfway point between the bottom of the skimmer opening and the top of the skimmer opening. In the absence of a skimmer, the fill volume is six inches below the overflow level of the spa.

2. For standard spas and inflatable spas, the test shall start when the water temperature has been at 102°F, ±2°F for at least four hours. The water temperature of the spa shall be a minimum 100°F for the duration of the test.

3. For exercise spas, the test shall start when the water temperature has been at 87°F, ±2°F for at least four hours. The water temperature of the spa shall be a minimum 85°F for the duration of the test. If the exercise spa is capable of maintaining a minimum water temperature of 100°F for the duration of the test, the exercise spa shall be tested in accordance with section 1604(g)(2)(B)2.

4. For combination spas, the standard spa portion shall be tested in accordance with section 1604(g)(2)(B)2., and the exercise spa portion shall be tested in accordance with section 1604(g)(2)(B)3. Record the total energy use for each spa portion separately as described in Section 5.6.5 of ANSI/APSP/ICC-14 2014, while both spa portions are powered on for the duration of the test.

(C) Test lab report requirements for portable electric spas manufactured on or after June 1, 2019. In addition to the requirements of section 5 of ANSI/APSP/ICC-14 2014 and section 1606 Table X, test lab reports shall include: date of test; minimum and maximum water temperatures settings; copy of the label(s) per section

1607(d)(14)(B); minimum, maximum, and average water temperatures during test; minimum, maximum, and average ambient air temperatures during test; length of test (in hours); record and plot ambient air temperature (in degrees Fahrenheit), water temperature (in degrees Fahrenheit), current (in amps), and voltage (in volts) at a maximum interval of five minutes during test; and, for inflatable spas, a list of the accessories that were tested with the spa.

...[skipping rest of (g) through (w)]

The following documents are incorporated by reference in Section 1604.

Number

Title

...[skipping CALIFORNIA ENERGY COMMISSION TEST METHODS through AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)]

THE ASSOCIATION OF POOL AND SPA PROFESSIONALS (APSP)

ANSI/APSP/ICC-14 2014

American National Standard for Portable Electric Spa Energy Efficiency

Copies available from:

The Association of Pool and Spa Professionals
2111 Eisenhower Avenue, Suite 500
Alexandria, VA 22314-4695
www.apsp.org
Phone: (703) 838-0083

...[skipping to the end of section 1604]

Note: Authority cited: Sections 25213, 25218(e), 25402(a)-25402(c) and 25960, Public Resources Code; and sections 16, 26 and 30, Governor's Exec. Order No. B-29-15 (April 1, 2015). Reference: Sections 25216.5(d), 25402(a)-25402(c) and 25960, Public Resources Code; and section 16, Governor's Exec. Order No. B-29-15 (April 1, 2015).

§ 1605.3. State Standards for Non-Federally-Regulated Appliances.

...[skipping (a) through (f)]

(g) Pool Heaters, Portable Electric Spas, Residential Pool Pump and Motor Combinations, and Replacement Residential Pool Pump Motors.

...[skipping (1) through (5)]

(6) Portable Electric Spas.

(A) The normalized standby power, as defined in Section 1604(g)(2)(A)9., of portable electric spas manufactured on or after January 1, 2006, shall be not greater than $5(V^{2/3})$ watts, where V = the fill volume, in gallons.

(B) The normalized standby power, as defined in Table G-3, of portable electric spas manufactured on or after June 1, 2019, shall be no greater than the applicable values shown in Table G-3.

Table G-3
Standards for Portable Electric Spas

<u>Appliance</u>	<u>Normalized Standby Power Condition</u>	<u>Maximum Standby Power (Watts)</u>
<u>Standard spas and the standard spa portion of combination spas</u>	<u>as defined in Section 6.1 and 6.2 of ANSI/APSP/ICC-14 2014</u>	<u>$3.75V^{2/3}+40$</u>
<u>Exercise spas and the exercise spa portion of combination spas</u>	<u>as defined in Section 6.1 and 6.3 of ANSI/APSP/ICC-14 2014</u>	<u>$3.75V^{2/3}+40$</u>
<u>Exercise spas and the exercise spa portion of combination spas capable of maintaining a minimum water temperature of 100°F for the duration of the test</u>	<u>as defined in Section 6.1 and 6.2 of ANSI/APSP/ICC-14 2014</u>	<u>$3.75V^{2/3}+40$</u>
<u>Inflatable spas</u>	<u>as defined in Sections 6.1 and 6.2 of ANSI/APSP/ICC-14 2014</u>	<u>$7(V^{2/3})$</u>
<u>Where V= the fill volume, in gallons.</u>		

...[skipping (h) through (w)]

The following documents are incorporated by reference in Section 1605.3.

Number

Title

...[skipping FEDERAL REQUIREMENTS and AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)]

THE ASSOCIATION OF POOL AND SPA PROFESSIONALS (APSP)

ANSI/APSP/ICC-14 2014

American National Standard for Portable Electric Spa Energy Efficiency

Copies available from: The Association of Pool and Spa Professionals
2111 Eisenhower Avenue, Suite 500
Alexandria, VA 22314-4695
www.apsp.org
Phone: (703) 838-0083

...[skipping to the end of section 1605.3]

Note: Authority cited: Sections 25213, 25218(e), 25402(a)-25402(c) and 25960, Public Resources Code; and sections 16, 26 and 30, Governor’s Exec. Order No. B-29-15 (April 1, 2015). Reference: Sections 25216.5(d), 25402(a)-25402(c), 25402.5.4 and 25960, Public Resources Code; and section 16, Governor’s Exec. Order No. B-29-15 (April 1, 2015).

§ 1606. Filing by Manufacturers; Listing of Appliances in Database.

(a) Filing of Statements.

...[skipping first paragraph through (3)]

Table X
Data Submittal Requirements

	<i>Appliance</i>	<i>Required Information</i>	<i>Permissible Answers</i>
	All Appliances	*Manufacturer’s Name	
		*Brand Name	
		*Model Number	
		Date model to be displayed	
		Regulatory Status	Federally-regulated consumer product, federally-regulated commercial and industrial equipment, non-federally-regulated

...[skipping *Non-Commercial Refrigerators, Non-Commercial Refrigerator-Freezers Non-Commercial Freezers through Residential Pool Pump and Motor Combinations and Replacement Residential Pool Pump Motors*]

G	Portable Electric Spas	*Voltage <u>Spa Type</u>	<u>Combination Spa.</u> <u>Exercise Spa.</u> <u>Inflatable Spa.</u> <u>Standard Spa</u>
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	<u>Volume (gallons)*Tested Spa Cover Model Number (applies to models manufactured on or after June 1, 2019 only)</u>	
	<u>Tested Spa Cover Manufacturer (applies to models manufactured on or after June 1, 2019 only)</u>	
	<u>Rated Capacity (number of people)</u>	
	<u>Rated Voltage (volts)</u>	
	<u>Normalized Standby Power (watts) Tested Spa Cover Is Insulated (applies to models manufactured on or after June 1, 2019 only)</u>	<u>True, False</u>
	<u>Spa Enclosure Is Fully Insulated</u>	<u>Yes, no True, False</u>
	<u>Spa Includes a Skimmer</u>	<u>True, False</u>
	<u>Maximum water temperature setting is less than 100°F (for exercise spas and the exercise spa portion of combination spas only) (applies to models manufactured on or after June 1, 2019 only)</u>	<u>True, False</u>
	<u>Portable Electric Spa Rated Volume (gallons) (for standard spas, inflatable spas, and the standard spa portion of combination spas only)</u>	
	<u>Exercise Spa Rated Volume (gallons) (for exercise spas and the exercise spa portion of combination spas only)</u>	
	<u>Portable Electric Spa Fill Volume (gallons) (for standard spas, inflatable spas, and the standard spa portion of combination spas only)</u>	
	<u>Exercise Spa Fill Volume (gallons) (for exercise spas and the exercise spa portion of combination spas only)</u>	
	<u>Portable Electric Spa Normalized Standby Power (watts) (for standard spas, inflatable spas, and the standard spa portion of combination spas only)</u>	
	<u>Exercise Spa Normalized Standby Power (watts) (for exercise spas and the exercise spa portion of combination spas only)</u>	

* "Identifier" information as described in Section 1602(a).

...[skipping to the end of section 1606]

Note: Authority cited: Sections 25213, 25218(e), 25402(a)-25402(c) and 25960, Public Resources Code; and sections 16, 26 and 30, Governor's Exec. Order No. B-29-15 (April 1, 2015). Reference: Sections 25216.5(d), 25402(a)-25402(c), 25402.5.4 and 25960, Public Resources Code; and section 16, Governor's Exec. Order No. B-29-15 (April 1, 2015).

§ 1607. Marking of Appliances.

...[skipping (a) through (c)]

(d) Energy Performance Information.

...[skipping (1) through (9)]

(10) Battery Charger Systems. Each state-regulated battery charger system shall be marked with a “BC” inside a circle. The marking shall be legible and permanently affixed to:

(A) the product nameplate that houses the battery charging terminal or;

(B) the retail packaging and, if included, the cover page of the instructions.

...[skipping (d)(11) through (d)(13)]

(14) Portable Electric Spas

(A) All portable electric spas manufactured on or after June 1, 2019, shall be marked by the manufacturer with the label specified in section 1607(d)(14)(B). The label shall be legible, conspicuously displayed to the consumer, and be removed only by the consumer.

1. For standard, exercise, and combination spas, the label shall be affixed on a readily visible location on the shell or skirt panel of the unit.

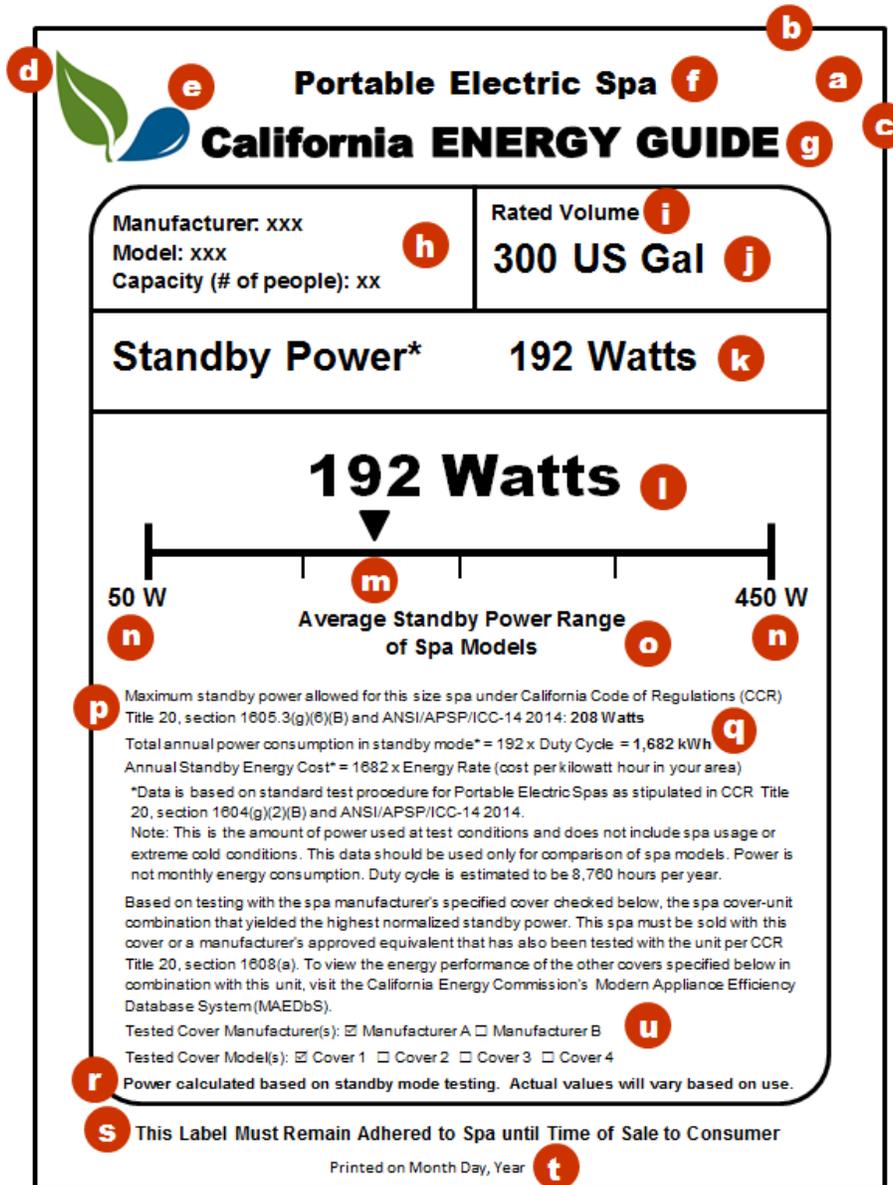
2. For inflatable spas, the label shall be affixed on a readily visible location on the unit's retail packaging.

(B) The label for all portable electric spas shall conform to the design specifications listed in subdivisions (d)(14)(B)1. through (d)(14)(B)4. in this section (inclusive). If the spa has been tested with multiple spa covers, the label shall display the most recent performance data, the model number, and the manufacturer, as listed in MAEDbS, of the tested spa cover of the spa unit-cover combination that yielded the maximum normalized standby power test result obtained in accordance with section 1605.3(g)(6)(B). The label may display the most recent spa cover model number(s) and corresponding spa cover manufacturer(s) for other covers tested

with the unit. If the label lists multiple spa covers, the label shall display the spa cover model number(s) and corresponding spa cover manufacturer(s) of the spa covers tested with the unit as listed in MAEDbS.

1. Label Specifications. The label shall be formatted as shown in Figure 1 and as directed in subdivision (d)(14)(B)2. of this section.

Figure 1. Label Design



2. Letter Codes for Figure 1 Label Design. Letter codes for Figure 1 above:

a. Shall be printed on a white label with black text.

- b. Minimum label width: 5 inches.
- c. Minimum label height: 6.25 inches.
- d. Leaf color: equivalent to Pantone 363 green (also permitted to be black).
- e. Water drop color: equivalent to Pantone 7691 blue (also permitted to be black).
- f. Font: Helvetica Neue Black; character height shall not be less than 15 point type. For standard spas, inflatable spas, and the standard spa portion of combination spas the text shall state the following: Portable Electric Spa. For exercise spas and the exercise spa portion of combination spas, the text shall state the following: Exercise Spa.
- g. Font: Helvetica Neue Black; character height shall not be less than 24 point type. Text shall state the following: California ENERGY GUIDE.
- h. Font: Arial Bold; character height shall not be less than 9.5 point type. Text shall state the following:
Manufacturer: [insert name of manufacturer here]
Model: [insert model number here]
Capacity (# of people): [insert number of people here].
- i. Font: Arial Bold; character height shall not be less than 9.5 point type. Text shall state the following: Rated Volume.
- j. Font: Arial Bold; character height shall not be less than 16 point type. The text shall state the value of the rated volume in U.S. gallons and shall state the units of the rated volume as follows: US Gal.
- k. Font: Arial Bold; character height shall not be less than 16 point type. The text shall state the following: Standby Power* [insert the normalized standby power value resulting from the test in watts here, rounded to a whole number] Watts.
- l. Font: Helvetica Neue Black; character height shall not be less than 24 point type. The text shall state the normalized standby power value resulting from the test in Watts, rounded to a whole number, and shall state the units of the tested standby power.
- m. The standby power chart arrow shall be scaled at the appropriate location between the minimum and maximum power range using the normalized standby power test result value for the spa which is being installed. The

minimum standby power shall be 50 watts, and the maximum standby power shall be 450 watts for standard spas, inflatable spas, and the standard spa portion of combination spas. The minimum standby power shall be 100 watts and the maximum standby power shall be 750 watts for exercise spas and the exercise spa portion of combination spas. If the normalized standby power test result is outside the power range, add or subtract, in increments of 50 watts, from the minimum or maximum power range values, until the normalized standby power test result is within the power range and update the minimum or maximum power range values on the label.

n. Font: Arial Bold; character height shall not be less than 12 point type.

o. Font: Arial Bold; character height shall not be less than 9.5 point type. The text shall state the following: Average Standby Power Range of Spa Models.

p. Font: Arial; character height shall not be less than 8 point type, and may be horizontally scaled to no less than 85 percent. The text shall state the following:

Maximum standby power allowed for this size spa under California Code of Regulations (CCR) Title 20, section 1605.3(g)(6)(B) and ANSI/APSP/ICC-14 2014: [insert the allowed maximum normalized standby power value based on fill volume, rounded to a whole number] Watts.

Total annual power consumption in standby mode*: [insert the normalized standby power value resulting from the test in watts here, rounded to a whole number] x Duty Cycle = [insert calculated value of total annual power consumption in standby mode here in kilowatts per hour, rounded to a whole number] kWh.

Annual Standby Energy Cost* = [insert total annual power consumption value here, rounded to a whole number] x Energy Rate (cost per kilowatt hour in your area).

*Data is based on standard test procedure for Portable Electric Spas as stipulated in CCR Title 20, section 1604(g)(2)(B) and ANSI/APSP/ICC-14 2014.

Note: This is the amount of power used during test conditions and does not include spa usage or extreme cold conditions. This data should be used only for comparison of spa models. Power is not monthly energy consumption. Duty cycle is estimated to be [insert duty cycle value in hours here. For

standard spas, exercise spas, and combinations spas insert 8,760. For inflatable spas, insert 5,040] hours per year.

Based on testing with the spa manufacturer's specified cover checked below, the spa cover-unit combination that yielded the highest normalized standby power. This spa must be sold with this cover or a manufacturer's approved equivalent that has also been tested with the unit per CCR Title 20, section 1608(a). To view the energy performance of the other covers specified below in combination with this unit, visit the California Energy Commission's Modern Appliance Efficiency Database System (MAEDbS).

Tested Cover Manufacturer(s): [insert name of manufacturer(s) here, names shall be preceded by a checkbox].

Tested Cover Model(s): [insert cover model number(s) here, model numbers shall be preceded by a checkbox].

- q. The format for the maximum standby power value and total annual power consumption value is the following: Font: Arial Bold. Character height shall not be less than 8 point type and may be horizontally scaled to no less than 85 percent.
- r. Font: Arial Bold; character height shall not be less than 8 point type, and may be horizontally scaled to no less than 85 percent. The text shall state the following: Power calculated based on standby mode testing. Actual values will vary based on use.
- s. Font: Arial Bold; character height shall not be less than 8 point type, and may be horizontally scaled to no less than 85 percent. The text shall state the following: This Label Must Remain Adhered to Spa until Time of Sale to Consumer.
- t. Font Arial; character height shall not be less than 8 point type, and may be horizontally scaled to no less than 85 percent. The text shall state the following: Printed on [insert the month, day, and year the label was printed on].
- u. The checkbox of the tested spa cover model number and corresponding spa cover manufacturer coinciding with the performance data shall be marked on the label.

3. The label shall be printed:

- a. on a removable adhesive-backed white polymer label or the equivalent for standard, exercise, and combination spas.
 - b. as specified in subdivision (d)(14)(B)3.a. or integrated as part of the unit's retail packaging design for inflatable spas.
4. All adhesive labels shall be applied so they can be easily removed without the use of tools or liquids, other than water, but shall be applied with an adhesive with an adhesion capacity sufficient to prevent dislodgment during normal handling throughout the chain of distribution to the consumer.

The following documents are incorporated by reference in Section 1607.

...[skipping to end of section 1607]

Note: Authority cited: Sections 25213, 25218(e), 25402(a)-25402(c) and 25960, Public Resources Code. Reference: Sections 25216.5(d), 25402(a)-25402(c) and 25960, Public Resources Code.