

## APSP Bulletin: Winterizing Tips for Pools, Spas, and Hot Tubs

### Off-Season Maintenance in Mild Climates

In mild climates during the off-season, pool and spa operations should be maintained at all normal levels. These include maintaining the water level, continuing regular sanitizer schedules, and retaining proper pH, total alkalinity, and calcium hardness levels. Circulating unheated water through the entire system will generally keep the equipment reasonably free of problems, even during occasional freezing periods.

The entire system can be operated intermittently, or on a timer set for when the sun is down or the weather is cooler. Make sure that the timer can be overridden if there is any danger that the equipment might freeze.

Twice-a-month cleaning is recommended for optimum care; at least once a month is the minimum. Uncovered pools and spas must be kept free of debris, such as leaves and other materials.

### Winterizing a Pool in Severe Climates

In climates where freezing temperatures are normal, a pool or spa should be completely winterized by cleaning, treating water (if left standing), and protecting the pool/spa and equipment from weather-related problems. It is necessary to winterize the plumbing, equipment, and pool structure before they freeze. Check the structure and all equipment to make sure everything is in safe and proper working order. Have repairs made during the off-season. Standard procedures for winterizing are provided below, but not every type of equipment is covered. Be sure to check the manufacturer's product information.

**1. Water Cleaning:** Vacuum thoroughly. Vacuum wastewater to the appropriate location. If the filter does not have a "waste" position, vacuum on "filter" position only. Where appropriate, use a portable pump to vacuum directly to waste.

**2. Water Treatment:** Test the water. Balance the pH, calcium hardness, and total alkalinity. Chemically treat the water with sanitizer, stabilizer, and algaecide just as you would at other times, or treat with a proper amount of special winterizing chemicals. This treatment is important so that water will not become corrosive when the temperature reaches the freezing point. Depending on the chemicals, some are added before draining, and some are added just before putting on a cover.

**3. Lower Water Level:** Here are suggested winter water levels for different types of pools, with or without solid material covers or mesh covers. Consult your cover manufacturer's literature.

- a. Vinyl-lined: 1 inch/2.5 cm below skimmer mouth, but lower in areas of heavy rain and snow precipitation.
- b. Plaster finish with solid material cover: 1 to 6 inches/2.5 to 15 cm below the skimmer mouth or tile line, whichever is lower.
- c. Painted or natural finish with solid material cover: 6 inches/15 cm below skimmer mouth.
- d. With mesh cover or no cover: 18 to 24 inches/45 to 61 cm below skimmer mouth.

e. With automatic covers: water level should not be lower than bottom of skimmer mouth.

Hydrostatic pressure can destroy a drained concrete pool if proper precautions are not taken (e.g., leaving the bottom drain valves open). If in doubt, it is best to leave the pool almost full of water.

**4. Piping and Valves:** Drain and blow water out of all piping, and fill pipes with a pool-winterizing antifreeze solution. This includes skimmer and main drain lines, return lines, and lines to solar heaters, cleaners, chlorinators, and other accessories. The pump, filter, and heater will also be drained. To blow water out of circulation piping, use a tank vacuum cleaner on reverse flow or an air compressor. A non-toxic antifreeze solution of one part propylene glycol to two parts water should protect water from freezing to 10°F/-12°C and allow for possible dilution by water still left in the pipes. Never use an automobile antifreeze.

Valves must be thoroughly drained and kept water-free. Be sure that any valves below the water level are sealed securely. Any lines below water level that are exposed to freezing but cannot be drained or filled with an antifreeze solution must be protected with an electric heat tape. Follow the manufacturer's instructions.

**5. Accessory Equipment:** Remove ladders, diving boards, and handrails. Rinse with clear water. Store in a cool, dry place. Diving boards should be stored flat, if possible.

**6. Lights:** Remove pool lights from their niches if they have less than 18 inches/45 cm of water over them. Either cover them with plastic and place on the deck, or weight them, if necessary, and lower to the bottom of the pool. Make sure that the breaker is turned off or that the fuse is removed so that the light cannot be turned on accidentally.

**7. Pumps and Motors:** Drain the pump by removing drain plugs provided for this purpose. These plugs should be left out so that condensation cannot build up within the casing and freeze in cold weather. Another method is to remove all water from the pump housing and strainer compartment using a wet/dry shop vacuum and add ½ cup to 1 cup/0.12 to 0.24L of antifreeze to the housing without removing the drain plugs. Then replace the strainer/pump lid.

Disconnect the power that leads to the motor if you are removing the motor. In northern climates, the motor is often removed from the pump housing and stored in a warm, dry location.

If there is a timer, be sure to remove the timer lugs and set to the “off” position. The circuit breaker should be turned off, or the fuses should be removed from the pool circuit.

When winterizing cast iron pumps, coat all drain-hole threads with the proper lubricant to prevent corrosion during the winter.

**8. Filters:** In general, all filters should be thoroughly cleaned before shutting them down. Do not leave water in any filter, and make certain that the open valves cannot leak water into the filter.

a. Backwash sand filters three to five times longer than normal. This can be done as the water is lowered, but not while vacuuming. A sand cleaner can be used during this process. Remove the drain plug and open any drain cocks, as well as the air relief on top of the filter. Then put the multi-port valve in the “winter” position. Inspect the sand bed and complete repairs, if needed. This requires removing the lid from the filter. Put the

lid back on the filter, but do not seal it. Leave the air relief valve open.

b. Backwash DE filters, drain them, take out the elements, and check them. These elements need to be soaked in a special cleaning solution. This cleaning process may reveal small tears in the fabric. After cleaning the inside of the tank, re-install the elements or store them indoors. In either case, reassemble the filter body, and do not fully tighten the filter lid. This will relieve pressure on the gasket during the winter.

c. With vacuum-type DE units, the drain should be left partially open. For pools located outside hard-freeze areas, the filters can be cleaned in the spring since they will be used occasionally in the off-season.

d. With cartridge filters, remove the cartridge, clean it, and store it where it can dry out. Then drain the cartridge filter body (tank) and leave the filter cap loosely attached to the filter body. As an alternative, remove water from the filter body with a wet/dry shop vacuum, add ½ cup to 1 cup/0.12 to 0.24L antifreeze, and reinstall the cartridge in the filter body.

All filters should be drained completely after winterizing the lines and pump. Leave drain plugs out, but grease the threads with a heavy grease to avoid rusting or corrosion.

## Winterizing an Inground Spa

In general, do not leave an inground spa empty for the winter, as hydrostatic pressure in the ground can damage or destroy it. Following are normal procedures for winterizing an inground spa.

**1. Drain the Spa Completely:** Follow all regulations regarding disposal of spa water. Check local codes. Be sure to turn on the blower to get all water out of the air channel. You may have to use a wet/dry vacuum or sponge.

**2. Blow out all Plumbing Lines and Piping.**

**3. Non-toxic Antifreeze:** Add a non-toxic antifreeze solution—such as one part propylene glycol to two parts water—to all pipes and blow lines until it appears at spa fittings. *Never* use toxic automobile antifreeze. Then plug the lines and install a quart-sized (liter-sized) bottle filled with sand or gravel in the skimmer. Fill skimmer body with antifreeze. Remove the weir.

**4. Beware of Hydrostatic Ground Pressure:** Inground spas are not left empty in areas where hydrostatic ground pressure may pop an empty inground spa out of the ground. Place vinyl or black poly sheeting, at least 6 mils/15mm thick, in the bottom of the spa to form a liner. Fill the spa with water to the bottom of the skimmer. This liner equalizes pressure and keeps water out of the pipes.

**5. Drain Filter Pumps, Air Blower, and Heater:** Follow the appropriate winterizing procedures for all equipment. Always check the manufacturer's product manual. Remove and store in an area safe from freezing.

**6. Keep Water Below Skimmer:** If water builds up in the spa before freezing weather, pump it out to keep water just below the skimmer. If you will not be checking the spa periodically, leave the spa empty enough to

accommodate some build-up of water.

## Winterizing a Hot Tub

Following are steps for winterizing a manufactured hot tub.

- 1. Power off:** Turn off the circuit breaker for the hot tub's electrical line or, if possible, unplug the unit.
- 2. Drain the Hot Tub:** Remove the cover and drain the hot tub. Use the hot tub drain line and/or a submersible pump to be sure you get all the water out. If you use a submersible pump, be sure to open drains you can find once the hot tub is empty.
- 3. Clean the Filters:** Remove and clean the filters. Have the owner store them in his/her basement or garage.
- 4. Check the Blower for Water:** If the hot tub has a blower, turn it on when the hot tub is empty to clear out any water in the air channel.
- 5. Remove Standing Water:** Vacuum or mop out any standing water. Use a wet/dry shop vacuum to suck or blow any water out of the jets, skimmers, and suction fittings.
- 6. Use Non-toxic Antifreeze:** Pour non-toxic antifreeze that does not contain ethanol into the skimmer, and try to get it into as many jets and suction fittings as you can. (Check the ingredients carefully—ethanol can damage rubber or synthetic seals, yet some swimming pool antifreeze products contain it.) You can use the wet/dry shop vacuum to blow the antifreeze through the plumbing.
- 7. Winterize the Equipment Area:** Check the pumps for drain plugs, heaters, and any places water might gather. Loosen the unions of pumps and heaters. Remove any drain plugs that may be on the pump housing. If you are in a particularly difficult environment, you may want to remove the pumps for storage in a less-exposed place, such as a basement or garage.
- 8. Use a Cover:** Cover the hot tub with the cover; strap in place. Check that the cover is in good shape and not leaking water into the hot tub. The cover's surface should repel water, and its shape should slope toward the outside to shed rainwater or snow.
- 9. Secure the Hatch Door:** Close and secure the equipment hatch door. Vermin will often try to nest inside hot tub cabinets over the winter. If they gain access, they can chew wires and cause expensive damage. Products are available to discourage rodents from entering the hot tub enclosure.

To return the hot tub to service, simply reverse the winterization process, being careful to purge the plumbing lines in the process.

For more information about servicing manufactured hot tubs, contact APSP ([memberservices@APSP.org](mailto:memberservices@APSP.org)) to order a copy of the *APSP Hot Tub Technician Manual*. For information about servicing pools and spas, order a copy of the *APSP Service Tech Manual*.

