

The information below is based on the ACME Kool Cel system. Most of the information may be applied to cooling systems by other manufacturers.

Please refer to the manual provided by the manufacturer of the cooling pads and/or water distribution system for the latest and most specific product operation and maintenance information.

KOOL-CEL START UP AND TESTING

Before installing the front pad retainers you may proceed with the start up and testing of the system. If installed, remove front pad retainers.

- 1) Test Water - Make up water should be tested for Ph level and soluble salts. Ph must be between 6 and 9 and salt concentrates below 40,000 PPM. See "Pad Care".
- 2) Float Valve - open the water supply line to the sump. Adjust the float valve so the water shuts off before the water level in the tank reaches the top of the overflow pipe.
- 3) Pump - **Prime the pump** (#30 and #60) per instructions received with the pump.
- 4) Flush the system to clean out all accumulated debris as follows:
 - a. Remove plug from bleed-off end of system.
 - b. Open the flow valve. Close clean out valve.
 - c. Be sure pump is primed prior to operations. Run power to pump and let the system flush out for approximately 5 minutes.
 - d. Shut the pump off and replace plugs.
- 5) Turn on the pump and be sure the water is flowing from all holes in the distribution pipe. Clean out any holes that are not spraying water.
- 6) Adjust the flow valve to 45° from the closed position. Replace the pad retainers and your system is ready for operation.
- 7) Temperature in a greenhouse that is empty will be considerably higher than a greenhouse with plants as the plants assist cooling by their transpiration.

KOOL-CEL MAINTENANCE

A regular maintenance schedule should be set up to keep your Kool-Cel System operating at peak efficiency and to maximize the life of the system.

A visual check should be made whenever you are in the area of the pad:

1. Check for dry spots on the pad
2. Check for algae and scale on pads; see "PAD CARE"

During the cooling season, when the pad is in operation:

Weekly

1. Clean out strainer to prevent possible damage to pump. This may need to be done twice a week.
2. Clean out sediment plugs at the ends of system; (Remove plugs and drain into a bucket with system pump off; replace the plugs)
3. Drain the sump to remove sediment, usually every two to four weeks. In areas with extremely high salt concentrates, this should be done weekly to lower salt concentrates in the sump. (Close flow valve, connect hose to the hose bib, open hose bib and turn on the pump.)

Monthly

Inspect the complete system:

1. Check for leaks and repair;
 2. Check bleed off connection to insure bleed off is occurring at all times;
 3. Check the strainer from the downspout in the sump - replace if necessary;
- Test water for Ph level, (make up water and sump water) See "Pad Care"

START AND END OF COOLING SEASON:

1. At the end of each season, drain the pump and piping system to avoid damage caused by rust and impure particles in the water. If they system is outside of the building, you **must** drain and remove the pump to avoid freeze damage.
2. To restart the system in the spring, follow the "Start up and Testing" procedure.
3. Inspect all parts and pads and replace any damaged or worn parts.

PAD CARE

Kool-Cel pads are very durable and long lasting. **To maximize the life of your pads** and keep the efficiency of the original installation, review the following items and take necessary action to correct any conditions that may be detrimental to the pad.

1. **Ph of re-circulating water** (from sump) must be maintained between 6 and 9. (7 is pure water). If these limits are exceeding, the stiffening agents in the pad will leach out and destroy the pad. Water containing acids to a degree that the Ph is below 6.0 aromatic hydrocarbons, or wetting and dispersing agents, such as, phosphates can be harmful to the pad.
2. **Hard water** resulting in Calcium Carbonate deposits on the pad is not harmful, but should be kept within limits. The well known Longelier Formula can help to approximate the Ph above which the scaling will appear. The help of a good water treatment expert is advisable if any hardness problems are encountered.
3. **Sodium Chloride** (salt water) concentrate above 50,000 PPM (approx.) will deposit salt on the pad and reduce airflow. Keep salt-concentrates below 50,000 PPM in re-circulating water and below 40,000 PPM in make-up water.
4. **Algae** will grow on any surface that is wet and exposed to sunlight. To help prevent algae buildup, follow these tips:
 - a) Do not draw make-up water from an open pond. Use well water or chlorinated water from city systems.
 - b) Cover the sump to avoid exposure to sunlight and airborne particles, and to keep animals from drinking it
 - c) Keep the fans running after the pump is shut of to dry the pads, thus killing the algae spores left on the pad.
 - d) Isolate the water make-up system from any other system that may carry fertilizers that would enhance algae growth.
 - e) If algae persist, use a swimming pool water algaecide non-chlorine, chloride (tablet type) in the sump about ¼ the concentrations suggested for pools.
5. Airborne dust and bugs do not seem to clog the airflow passages of Kool-Cel. When the system is running, this clogging washes away.
6. When Kool-Cel is installed within reach of poultry or livestock it should be guarded.
7. **Bleed-off** - Since the water is continuously evaporating and being replaced by fresh water, the salts and minerals are left behind in the re-circulating water. As these impurities become concentrated, they build up in the pads unless steps are taken to prevent this. To reduce the buildup of deposits and scale a bleed-off from 1 to 2 percent of the re-circulating water is usually required. This is particularly true in areas that have a high mineral content in their water. The required bleed-off is provided by the bleed-off fitting in the plug.