

# CLEARWATER™

POOL SYSTEMS

*The Healthy Alternative to Chlorine*

***Model # CS-450***



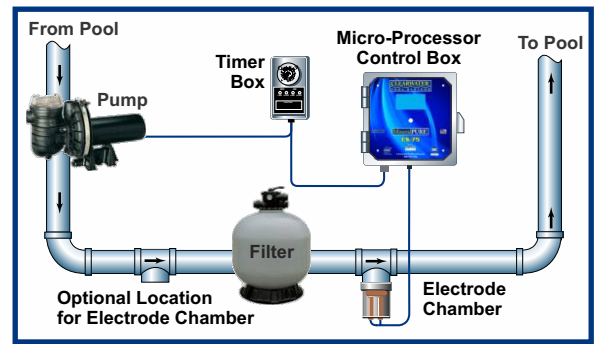
*Premium Model — handles up to 450,000 gallons*

**MineralPURE®**

**SPECIFICATION SHEET**

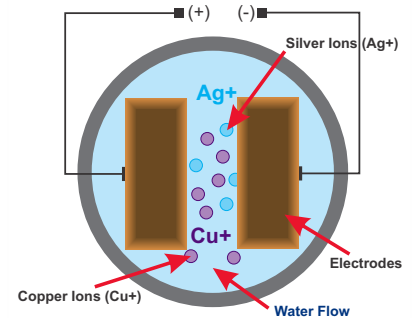
# How MineralPURE Works

The MineralPURE purification system consists of a state-of-the-art micro-processor control box and a scientifically designed set of **electrodes** composed of copper or copper/silver alloy that are set slightly apart from one another. Water is passed through a specially designed **flow cell chamber** that houses the electrodes. The control box works by generating a precise, low voltage, DC current (at milliamp levels) to the electrodes.



Basically, the current causes some of the outermost atoms of the electrodes to lose an electron, thus becoming positive ions. While the water is running through the chamber, many of these ions are swept away before they can reach the other side of the electrodes. As a result, the mineral ions are dispersed into the body of water that is being purified.

The greatest benefit of mineral ionization is that the ions remain in the water providing a residual protection. They provide **long-term, nontoxic purification** and prevent against recontamination. Unlike most other types of sanitizers, the mineral ions remain in the water until they flocculate, or form masses with algae and bacteria and then become large enough to be removed by the filtering equipment.



When the "used" mineral ions are removed, the microprocessor control box is always producing new mineral ions to continuously sanitize the water.



## CS-450 IONIZER SPECIFICATION SHEET



**POOL SIZE:** up to 450,000 U.S. gallons.

**INPUT VOLTAGE:** 90 to 264VAC, at 47 to 63 HZ, auto switching

**INPUT CURRENT and WATTAGE:** With electrode output set to 1000mA (max)  
1.6A at 120VAC (192 Watts), 1.4A at 240VAC (336 Watts)

**OUTPUT VOLTAGE:** 2.5VDC to 20VDC, Auto Ranging, Dynamically Adjusted

**OUTPUT CURRENT:** Adjustable in 5mA increments

0 to 1000mA DC in analog mode (each output)

0 to 1000mA DC average in pulse width modulation mode (each output)

**CIRCUIT PROTECTION:** internal input fuse, both on high side and low side, input line spike/surge immunity to IEC 1000-4-5, level 3

**FUSES:** F1 - 2A, 250VAC, 5x20mm, Slow Blow / F2 - 4A, 250VAC, 5x20mm, Slow Blow

**IONIZATION METHOD:** electrolysis of copper or copper/silver alloy electrodes by a microprocessor control circuit

**ELECTRODE:** Six sets of electrodes, comprised of copper (CLE-05), copper/silver alloy electrodes are available - 7" long 90/10 copper/silver alloy electrodes (CLE-20), 6" long 80/20 copper/silver alloy electrodes (CLE-14), contact **Clearwater Enviro Tech** for details.

**ELECTRODE CHAMBER:** Customers choice between 3" or 4" tees or crosses

**ENCLOSURE:** weather resistant NEMA 4X (IP65) rated, UL 94 Flame Rating, UL UV rated, high impact corrosion resistant thermoplastic with hinged polycarbonate cover

**ENCLOSURE DIMENSIONS:** 16" x 14" x 7"

**OPERATING TEMPERATURE RANGE:** 32 - 110 degrees F

**WARRANTY:** 3 years, parts and labor - excluding electrodes

**SHIPPING WEIGHT:** 76 lbs.

**CARTON DIMENSIONS:** 24" x 24" x 24"

### HEAD LOSS:

When using:

CLF-49 - 3" Sch. 80 Tee - Flow Rate of 25 GPM Total Head Loss (psi) is < .20 PSI

CLF-51 - 3" Sch. 80 Cross Tee - Flow Rate of 25 GPM Total Head Loss (psi) is < .20 PSI

CLF-48 - 4" Sch. 80 Tee - Flow Rate of 25 GPM Total Head Loss (psi) is < .20 PSI

CLF-52 - 4" Sch. 80 Cross Tee - Flow Rate of 25 GPM Total Head Loss (psi) is < .20 PSI

**HYDROSTATIC PRESSURE:** Maximum Recommended Pressure: 50PSI

**USING THE CLE-05 ELECTRODE:** This Ionizer with the output set to 50% (500mA) produces 2.148 g of copper per hour. When set to 100% (1000mA) produces 4.296 g of copper per hour.

### ION PRODUCTION WITH THE FOLLOWING WATER CONDITIONS:

Water Temperature: 72.7 °F

Total Chlorine: None

pH: 7.45

TDS: 347 mg/L

Hardness: 215 mg/L

Total Alkalinity: 85 mg/L