E-CLEAR TECHNOLOGIES

ON OXYGEN

HEALTHY **WATER** • HEALTHY **EARTH** • HEALTHY **YOU**

2023 USER MANUAL

POOLS • DRINKING WATER • PONDS

Patented Technology (2003/2934)

CONTENTS

Overview

Thank you for purchasing the E-Clear system. This sanitizer is chemical free and mimics nature in the way it sanitizes water.

This system must be physically installed according to the installation guide and then the pool water must be balanced. If this is done correctly then you will have many years of of healthy chemical free pool water.

After installation and balancing of the water, you have 2 options.

1. You or someone you employ looks after the pool, does weekly testing of pH and copper and adjusts the ionization dial as necessary to maintain a pH of between 6.8-7.2, a copper residual of 0.5ppm and if you have silver, a silver residual of 50ppb.

2. Option two is to download the E-Clear app, sign up for a monthly subscription and let us check and adjust your Eclear system as needed.

All you need to do is enter your copper test kit result into the app weekly.

Either way your trust in the Eclear system will not disappoint you with, soft, healthy, chemical free water that is almost fit to drink!

And as a bonus you save on chemical costs, you will save the environment by not adding harsh, dangerous chemicals into the ground water and most importantly you and your family will not be swimming in a toxic soup of chemicals that are scientifically proven to cause cancer, heart disease and general I'll health, damaged hair, burning eyes, eczema and numerous skin conditions

Welcome to the world's healthiest water!

SECTION 1: GENERAL INFORMATION

1. Safety

Please read this entire manual before unpacking, setting up or operating this equipment. Pay attention to all danger and caution statements. Failure to do say could result in serious injury to the operator or damage to the equipment. To ensure that the protection provided by this equipment is not impaired, do not install this equipment in any manner other than that specified in this manual.

2. Product Overview

The e-clear 100% Chlorine free New Generation X series- provides multiple forms of toxic free oxygen which splits into 4 powerful oxidizers (01)- (02)- (OH)- (H2O2).
These chemically free oxidizers are produced from and delivered directly into, the water stream, in grams per minute via Electronic Oxidation. This, combined with ultraviolet (optional) and Copper and/or Pure Silver ionization, provides the most advanced, most efficient, toxic free purification technology available for cleaning swimming pool water. Ensuring 100% chlorine free, bacteria free, algae free, and salt free, crystal clear water.

3. Model Description

a. Pools UP TO 75 000L

- **i.** Chemical free- MKX/CF-75. MKX/CF-75UV
- **ii.** Low Chlorine residual of 0.5ppm- MKX/LC-75. MKX/LC-75UV
- **iii.** Chemical free plus pure Silver - MKX/CFSI-75. MKX/CFDI-75UV
- **iv.** Low Chlorine plus Silver Ionizer- MKX/LCSI-75. MKX/LCSI-75UV
- **v.** Chlorine free with Silver instead of Copper- MKX/OXSI-75. MKX/OXSI-75UV
- **vi.** Oxygen and UV only- MKX/OXY-75UV
- **vii.** ULTRAVIOLET SANITIZER ONLY- 55 WATT UV

b. **Pools UP TO 150 000L** (as above)

- i. MKX/CF-150. MKX/CF-150UV
- ii. MKX/LC-150. MKX/LC-150UV
- iii. MKX/CFSI-150. MKX/CFSI-150UV
- iv. MKX/LCSI-150. MKX/LCSI-150UV
- v. MKX/OXSI-150. MKX/OXSI-150UV
- vi. MKX/OXY-150UV
- vii. 110 WATT UV

c. Pools UP TO 250 000L

- i. MKX/CF-250. MKX/CF-250UV
- ii. MKX/LC-250. MKX/LC-250UV
- iii. MKX/CFSI-250. MKX/CFSI-250UV
- iv. MKX/LCSI-250. MKX/LCSI-250UV

v. MKX/OXSI-250. MKX/OXSI-250UV

vi. MKX/OXY-250UV

vii. 220 WATT UV

d. Pools UP TO 500 000L

i. MKX/CF-500. MKX/CF-500UV

ii. MKX/LC-500. MKX/LC-500UV

iii. MKX/CFSI-500. MKX/CFSI-500UV

iv. MKX/LCSI-500. MKX/LCSI-500UV

v. MKX/OXSI-500. MKX/OXSI-500UV

vi. MKX/OXY-500UV

vii. 440 WATT UV

e. Pools UP TO 750 000L

i. MKX/-750. MKX/CF-750UV

ii. MKX/LC-750. MKX/LC-750UV

iii. MKX/CFSI-750. MKX/CFSI-750UV

iv. MKX/LCSI-750. MKX/LCSI-750UV

v. MKX/OXSI-750. MKX/OXSI-750UV

vi. MKX/OXY-750UV

vii. 660 WATT UV

f. Pools UP TO 1 MILLION L

i. MKX/CF-1000. MKX/CF-1000UV

ii. MKX/LC-1000. MKX/LC-1000UV

iii. MKX/CFSI-1000. MKX/CFSI-1000UV

iv. MKX/LCSI-1000. MKX/LCSI-1000UV

v. MKX/OXSI-1000. MKX/OXSI-1000UV

vi. MKX/OXY-1000UV

vii. 880 WATT UV

g. OLYMPIC POOL- 2.5 MILLION L

i. MKX/CF-2500. MKX/CF-2500UV

ii. MKX/LC-2500. MKX/LC-2500UV

iii. MKX/CFSI-2500. MKX/CFSI-2500UV

iv. MKX/LCSI-2500. MKX/LCSI-2500UV

v. MKX/OXSI-2500. MKX/OXSI-2500UV

vi. MKX/OXY-2500UV

vii. 2200 WATT UV

h. FOR POOLS UP TO 100 MILLION LITRES

SECTION 2:SPECIFICATIONS

1. Electronic Box

Enclosure: IP67, PVC, splash proof.
Power (external): 230v AC, 50/60Hz input4-12v DC output
- 230v output to UV ballast (if in separate box)

Operating temperature: 0 - 60 °C
Weight: 1.0 kg -3kg

2. Electrode Chamber (inline and assembly versions)

Enclosure: Poly vinyl Chloride (PVC)
Oxygen electrode: Titanium Composite
Ionization Electrode: Copper composite
Ionization Electrode: 99% PURE SILVER
Connecting bolts: 316 food grade stainless steel
Operating temperature: 0-50 °C
Weight: 1.5kg - 15kg

3. Ultraviolet Chamber

Enclosure: 316L food grade stainless steel
Other parts: PVC
Lamp: 55 W UVC high output ultraviolet germicidal fluorescent lamp.

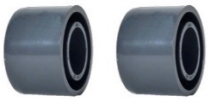
SECTION 3: INSTALLATION

1. Unpacking - What's in the box

STANDARD DIGITAL

OR

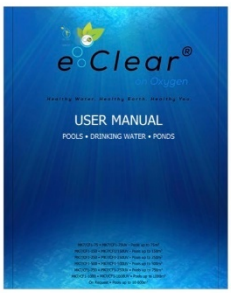
PREMIUM TOUCHSCREEN



2 X REDUCING BUSHES
90-63MM OR 63-50MM

63MM OR 90MM ELECTRODE CHAMBER

COPPER TEST KIT



USER MANUAL

INSTALLATION GUIDE

MAINTENANCE SCHEDULE

DANGER: AC mains outlets in wet or potentially wet locations must always be provided with a ground fault circuit interrupting circuit breaker (GFCI/GFI).

2. Switches Orientation

Mains ON/OFF - bottom of box

Side of box:

Oxidation ON/OFF

Ionization ON/OFF

UV ON/OFF

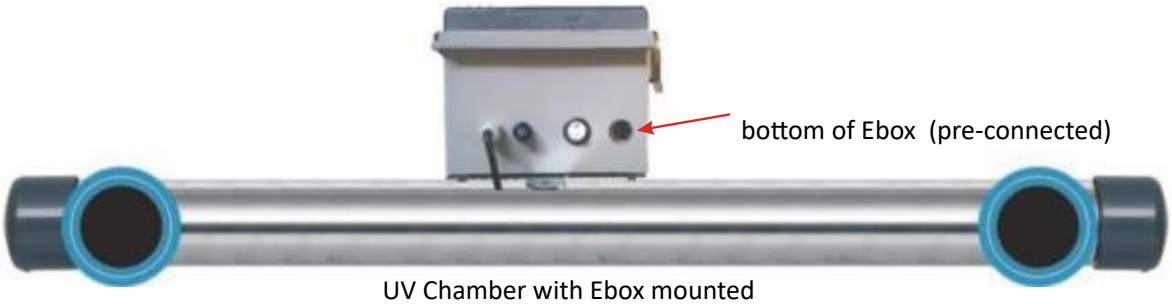
UV ON/OFF Switch

3. **Connections**

3. Electrodes connections

3. Large Box and Assembly

3. UV Connections



UV Chamber with Ebox mounted

3. eClear Water Purification Systems Technical Specifications

3. GENERAL SPECIFICATIONS

ULTRAVIOLET CHAMBER

Extended chamber for longer contact time to water. Removes 99.9% of all waterborne parasites and diseases-including the deactivation of cryptosporidium. Special long life high Spektrotherm germicidal UV lamps. 10 000hrs.

ELECTRONIC MANAGEMENT UNIT

Microprocessor technology with integrated digital display. Auto boost for increased current dosing of oxygen/ionization electrodes. Electronic UV lamp ignition and "lamp failure indicator. Digital display indicators for dosing output of oxygen/ionization. Fully programmable SECAM system.

90mm Oxygen Assembly

Length: 220mm
Width: 45mm
Depth: 85mm
Weight: 600g
Lug size: M6
Material: Base material – Titanium
Coating material – Proprietary coating
Patented Technology 2003/02934
Surface area: 138600mm^2=1386cm^2
0.139m^2
Current draw: 2.2 Amps - 9 Volts
Chemical Production:
Hydroxyl ions – OH
Atomic Oxygen – O_1
Oxygen - O_2
Hydrogen peroxide – H_2O_2

90mm Copper plate

Length: 120mmX75mmX40mm
Weight: 850g
Lug size: M6
Material: Cu
Characteristics:
Biostatic
Antimicrobial
Function: Release of copper ions
Lifespan: 1-3 years

63mm Oxygen Assembly

Length: 200mm
Width: 42mm
Depth: 54mm
Weight: 300g
Lug size: M6
Material: Base material – Titanium
Coating material – Proprietary coating
Patented Technology 2003/02934
Surface area: 55 500mm^2=555cm^2
0.0559m^2
Current draw: 2.2 Amps - 9 Volts
Chemical Production:
Hydroxyl ions – OH
Atomic Oxygen – O_1
Oxygen - O_2
Hydrogen peroxide - H_2O_2

63mm Copper Plate

Length: 100mmX46mmX25mm
Weight: 450g
Lug size: M6
Material: Cu
Characteristics:
Biostatic
Antimicrobial
Function: Release of copper ions
Lifespan: 1-3 years

MK – 75

Size
Inline chamber: 63mm straight
(470mm x 100mm)
Electronic box: 300mm x 180mm x 150mm
Weight
Inline chamber: 2.25kg
Electronic box: 2.7 kg

Electrical
5v •40w•2.5A
12hrs=0.3kWh/day
Flow rate:
90ℓ/ min
0.5 m/sec

MK – 75UV

Size
Inline chamber: 63mm straight
(470mm x 100mm)
UV chamber & E-box: 360mm x 980mm
Weight
Inline chamber: 2.25kg
UV Chamber & E-box: 7.3 kg

Electrical
5v •40w•2.5A
12hrs=0.3kWh/day
Flow rate:
90ℓ/ min
0.5 m/sec

MK – 150

Size
Inline chamber: 90mm straight
(470mm x 130mm)
Electronic box: 300mm x 180mm x 150mm
Weight
Inline chamber:4.5 kg
Electronic box: 2.7 kg

Electrical
5v •40w•2.5A
12hrs=0.3kWh/day
Flow rate:
300ℓ/min
1 m/sec

MK – 150UV

Size
Inline chamber: 90mm straight
(470mm x 130mm)
UV chamber & E-box: 360mm x 980mm
Weight
Inline chamber: 4.5kg
UV Chamber & E-box: 16kg

Electrical
230v•150w•2.5A
12hrs=1.5kWh/day
Flow rate:
90ℓ/min
0.5 m/sec

MK – 250

Size
Inline chambers 4 x 470mm x 130mm
E-box:400mm x 300mm x 160mm
Weight

Inline chambers: 13.5kg
E-box: 6kg

Electrical

5v•160w•10A
12hrs=1.2kWh/day

Flow rate:

1800ℓ/ min
2 m/sec

MK – 250UV

Size

Inline chamber:4 x 470mm x 130mm
UV chamber and E-box:
500mm x 1020mm x 400mm

Weight

Inline chambers: 13.5kg
UV chamber and E-box:23kg

Electrical

230v•380w•10A
12hrs=4kWh/day

Flow rate:

1800ℓ/ min
2 m/sec

MK – 500

Size

Inline chambers: 8 x 470mm x 130mm
E-box: 2 x 400mm x 300mm x 160mm

Weight

Inline chambers: 27kg
E-box:2 x 6kg

Electrical

5v•320w•20A
12hrs=2.5kWh/day

Flow rate:

3600ℓ/min
4 m/sec

MK – 500UV

Size

Inline chamber:8 x 470mm x 130mm
2 x UV chamber and 2 x E-box:
2 x 1020mm x 500mm x 400mm

Weight

Inline chambers: 27kg
2 x UV chamber and 2 x E-box:2 x 23kg

Electrical

230v•720w•20A
12hrs=8kWh/day
Chambers:8x470mm x130m

Flow rate:

3600ℓ/min
4 m/sec

MK – 750

Size

Inline chambers: 12 x 470mm x 130mm

Weight

Inline chambers: 40.5kg
E-box:3x6kg

Electrical

5v•480w•30A
12hrs=3.6kWh/day

Flow rate:

5200ℓ/min
6 m/sec

MK – 750UV

Size

Inline chamber:12 x 470mm x 130mm
3 x UV chamber and 3x E-box:
3 x 1020mm x 500mm x 400mm

Weight

Inline chambers: 40.5kg
3 x UV chamber & 3xE-Box: 3 x 23kg

Electrical
230v•1140w•30A
12hrs=12kWh/day
Flow rate:
5200ℓ/min
6 m/sec

MK – 1000

Size
Inline chambers: 16 x 470mm x 130mm
E-box: 4 x 400mm x 300mm x 160mm
Weight
Inline chambers: 54kg
E-box:4 x 6kg
Electrical
5v•640w•40A
12hrs=5kWh/day
Flow rate:
7200ℓ/min
8 m/sec

MK – 1000UV

Size
Inline chamber:16 x 470mm x 130mm
4 x UV chamber and 4 x E-box:
4 x 500mm x 1020mm x 400mm
Weight
Inline chambers:54kg
4 x UV chambers and 4 x E-box:4x23kg
Electrical
230v•1450w•40A
12hrs=16kWh/day
Flow rate:
7200ℓ/min
8 m/sec

SECTION 4: SYSTEM START-UP

1. Controls Orientation

1. Oxygen Power Indicator
2. Ionization Power Indicator
3. UV on/off Switch
4. Oxygen Dosing Dial
5. Ionic Dosing Dial
6. Ionic Program Dial
7. Quick Setup Instructions
8. Ionic Dosing Indicator
9. Oxygen Dosing Indicator

2. Controls Description

1. Oxygen and ionization dosing meter
2. High/ low output switch
3. Increase/ decrease dosing dial
4. Ionization output indicator
5. Oxygen output indicator
6. Polarity indicator
7. Main power on/off switch
8. Electrode power on/off
9. UV on/off
10. White cable to oxygen plates and on/off switch
11. Black cable to copper plates and on/off switch

3. **Large Box Control Orientation**

4. Water Preparation - IMPORTANT

d. Calcium

- A calcium hardness of at least 250ppm in your pool water is essential when operating the e-clear system. This is necessary to maintain the conductivity of the water, thereby ensuring operational efficiency.
- The procedure of raising the calcium hardness in the pool water should be carried out by the installer or by a qualified pool technician making use of the prescribed test equipment.

CAUTION-the e-clear system will not operate properly without this pre-requisite calcium hardness.

4. pH

- The correct operating pH in the pool water, for the e-clear system to operate efficiently, is in the range of 6.8- 7.2. If the pool water's pH is allowed to rise above 7.3 for longer than 48 hours, the water may turn green.
- A pH range of 6.8- 7.2 must be maintained if the pool water is to clean and clear. pH may need to be adjusted as often as, every second day, or as little as once a week. This is dependent on individual swimming pool conditions (e.g. Amount of sun, leaves or people entering the pool)

- E-clear accepts no responsibility for staining due to irregular maintenance of pool PH levels.

4. Copper Residual

- A copper residual of 0.5ppm in the pool water is necessary to maintain Bacteria/algae free conditions and maximum performance of the oxidation process.
- Upon initial operation of the e-clear system, the copper residual will take a period of time to reach 0.5ppm. In the interim, additional help is required to ensure clean and clear pool water during this 'set-up' period it is necessary to shock treat the water with, either, chlorine or active oxygen (until the copper residual reaches 0.5ppm) This initial set-up period may last a couple of weeks, depending on individual conditions.
- Once the copper residual is 0.5ppm, it is no longer necessary to shock treat the water, the pool will run only on the e-clear system- 100% chlorine free.
- In order to achieve a copper residual of 0.5ppm quicker, it may be necessary to run the pool's circulation pump 24 hours, along with the e-clear system. During this initial setting up period it will be necessary to test the copper often, until 0.5ppm is achieved.
- Once this residual is achieved the ionization may be switched off at the side of the box. Only switch on the ionization again, when the copper residual drops below 0.5ppm. Test the copper weekly to note the residual.

To test copper:

- Switch off e-clear unit power.
- Backwash and rinse filter.
- Test pH if not between 6.8 and 7.2, readjust pH manually by adding pool acid (see instructions on can label). Once the pH is in the range of 6.8-7.2, the copper may be tested.
- CAUTION- A false copper reading will occur if the pH is out of the range of 6.8-7.2
- CAUTION- during initial start-up it is necessary to circulate the pool water 24 hours a day. Thereafter adjust the pool's timer to run according to times detailed on face of e-clear electronic box. See below- filtration times.
- Switch e-clear unit on
- If copper residual is 0.5ppm or higher, switch off ionization (on side of electronic box). If copper is below 0.5ppm, switch on copper until 0.5ppm is achieved.
- NOTE- Oxidation always remains on.
- CAUTION- During winter months it may be necessary to ionize less.

4. Filtration

- Pool Volume

  40 - 50m^3 (40 000L- 50 000L)- 6 hours
  55-75m^3- 8 hours
  80-100m^3- 10 hours (12 in very hot weather)
  105-125m^3- 12 hours (15 in very hot weather)
  130-150m^3- 15 hours (18 in very hot weather)

- Above indicates the length of time necessary to operate the e-clear system. (oxidation always on when e-clear unit on and ionization as necessary- see Above)
- If the swimming pool is heated and is circulating 24 hours a day, it is necessary to install a separate timer controlling the eClear system, in order to operate the e-clear system only, for the periods shown above

  CAUTION- too much oxidation will cause the pool water to appear hazy. Too much copper may stain pool walls. These must be maintained correctly.

Hazy water

- Glass media filter may be inadequate- a minimum of between 160kg and 300kg of high quality filter glass media is required for the e-clear system to operate effectively.
- A deep filter bed of between 800mm and 1000mm of filter glass media is ideal. If filter is adequate and copper residual is 0.5ppm and water is hazy, then a filter flocculant or gel bloc may be necessary (follow instructions for use on package)
- An algaecide may also be added (see package instructions). If hazy water persists, the flow rate through the filter may be too weak.
- A turnover of the entire pool's volume every 4 hours is necessary. This may be achieved through use of a stronger pool pump and bigger diameter circulation pipes.

SECTION 5:STANDARD OPERATION

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5. Oxidation (black electrodes, white cable, 2 pin)

When the e-clear electronic box is powered, the oxygen plates should always be powered, i.e. They need never be switched off independently of the mains power. The electronic box must only be powered when the pool water is circulating see section 4.4.4.

5. Ionization Copper (pink electrodes, black cable, 3 pin)

During standard operation, it is necessary to carefully gauge usage of swimming pool i.e. Body load, amount of sunshine pool water receives and amount of debris falling into water. These factors will determine the length of time the ionization plates are to be on. This is done by regularly testing the copper and maintaining the 0.5ppm residual by manually switching the copper on or off at the side of the electronic box. Eventually an equilibrium will be reached. For example, it might be necessary to run the ionization every 4 days out of 7 to maintain the copper residual at 0.5ppm under current conditions.

5. Ionization Silver (silver 100mm long 10mm diameter rods)

Silver is now on a separate channel to copper and can thus be adjusted separately.. silver is a time tested method of killing all microorganisms with a very low residual of 50ppb. It also does not stain as copper can if pH goes too high. It is however expensive. Also no test kit exists that is cost effective to test the silver residual.

5. Ultraviolet

Lamp life is 10 000? Hours. UV runs when electronic box is powered.
Check UV lamp indicator on face of electronic box for operation. Replace after 10 000 hours of operation.

SECTION 6:MAINTENANCE

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6. General maintenance

It is extremely important to maintain a pH in the range of 6.8-7.2. This allows for most effective operation of eClear's natural fresh water oxidation process.
It is extremely important to maintain a copper residual of 0.5ppm. This will ensure the cleanest, safest pool water.

It is extremely important to maintain clean filter glass media for maximum filtration of all solid matter. This is done by regularly backwashing and rinsing the filter and by changing or rejuvenating the filter glass media annually.
Calcium hardness may need to be checked annually, especially in pool's that are topped up with new water regularly. Ensure that this is carried out by a professional.

6. Electrode cleaning

Both the oxygen and copper plates may, from time to time become caked with dirt. This will impede proper performance of the e-clear system. It is therefore necessary to clean the plates or to have them cleaned by a certified e-clear technician.

Method for cleaning plates:

- Switch off the pool pump and e-clear unit
- Undo nuts at plates to remove electrode cables
- Unscrew unions at each end of the copper chamber and at each end of the oxygen chamber.
- Dilute one part pool acid (hydrochloric acid) to five parts water, in a bucket. About a 20cm deep solution.
- Immerse each chamber in the acid solution for about 5 minutes or until build-up has dissolved.
- Immediately rinse in clean water to remove acid residue.
- Replace both chambers inline so that water in circulation will flow through the oxygen chamber first then the copper chamber.
- Replace electrode cables (white to oxygen plated)

6. Electrode replacement

Replacement of copper plates is, preferably to be done by an e-clear certified Technician.

Method to replace copper plates:

- Switch off pool pump and e-clear system
- Undo nuts at plates to remove electrode cables
- Unscrew unions at each end of copper chamber
- Remove copper chamber
- Undo holding nuts (these may be re-used if o-rings intact)
- Slide out old copper plates, slide in new copper plates so that the plate lug sits over the hole in the PVC. Screw in bolts tightly.
- Replace chamber and tighten unions
- If leaks occur at bolt o-rings, tighten slightly
- Replace electrode cables.

It is not necessary to change oxygen plates as they are not sacrificial.

6. UV lamp replacement

It is preferable for this to be carried out by a qualified electrician or e-clear Technician. Switch off pool pump and unit

Carefully remove endcaps form UV chamber (be careful to not pull on wires.) Undo electrical wires from 'chocolate blocks' using a screwdriver Carefully unscrew grey threaded bush, making sure to retain o-rings. Slide out UV lamp from chamber.

Reconnect old chocolate block to new UV lamp and carefully slide new lamp into UV chamber.

Screw back grey threaded bushes making sure o-rings are re-seated. Re-attach electrical connections as before

Switch on pool pump only NOT E-CLEAR UNIT, and check for leaks.

Return endcaps
Dispose of UV lamp in accord with government regulations.

6. Repair/ Spares service

All local and international repairs contact:

E-clear Technologies South Africa

Phone: Jason +27 76 611 7803

Office:+27 21 854 6356

Fax:+27 21 854 6117

Email:jason@eclearsa.com

Mail:PO Box 2308

Somerset West

7129

South Africa

Download our new E-clear App to your smartphone/tablet

SECTION 7:CERTIFICATION AND LIMITED WARRANTY

7. **Patent**

Patent number- 2003/2934

7. Limited Warranty

E-clear Technologies warrants its products to the original purchaser against any defects that are due to faulty material or workmanship for a period of one year from date of shipment unless otherwise noted in the product manual.

In the event that a defect is discovered during the warranty period E-clear agrees that, at its option, it will repair or replace the defective product or refund the purchase price excluding original shipping and handling charges.

Any product repaired or replaced under this warranty will be warranted, only for the remainder of the original product warranty.

This warranty does not apply to consumable products such as lamps or Copper Electrodes.

Contact E-clear or your distributor to initiate warranty.

Products may not be returned without authorization from E-clear Tech.

Limitations:

This warranty does not cover:

Damage caused by natural disasters, labour unrest, acts of war (declared or undeclared), terrorism, civil strife, or acts of any governmental jurisdiction.
Damage caused by misuse, neglect, accident or improper application or installation. Damage caused by any repair or attempted repair not authorized by eClear Technologies Any product not used in accordance with the instructions furnished by eClear.
Freight charges to return merchandise to eClear
Freight charges on expedited or express shipment or warranted parts or products
Travel fees associated with on-site warranty repair

This warranty contains the sole express warranty made by eClear Tech.
In connection with its products. All implied warranties, including without limitation, the warranties of merchantability and fitness for a particular purpose, are expressly disclaimed.

This warranty constitutes the final, complete and exclusive statement of warranty terms and no person is authorized to make any other warranties or representations on behalf of eClear Technologies.

Limitations of Remedies

The remedies of repair, replacement or refund of purchase price as stated above are the exclusive remedies for breach of this warranty. On the basis

Of strict liability or under any other legal theory, in no event shall E-clear Technologies be liable for any incidental or consequential damages of any kind for breach of warranty or negligence.

8. INSTALLATION GUIDE

SECTION 8:

8. Physical INSTALLATION

Step 1

The e-Clear must only operate when the pool pump is running.

Step 2

The e-Clear system must be installed as last piece of equipment before water returns to the pool. (See diagrams above)

Step 3

The chamber should be fitted in a vertical orientation, not sideways, preferably as a "I"

Step 4

Water must flow through the ultraviolet chamber first (if installed) then the oxygen chamber and finally the ionization chamber.

Step 5

The white electrode cable attaches to the black oxygen plates. The black electrode cable attaches to the pink ionization plates. Undo cable ties and plug cable into ebox.

Step 6

Large assembly type units must be installed according to technical installation drawings guidelines.

Step 7

The entire pool volume should flow through the pool filters every 4 hours, according to international DIN standard

Step 8

e-Clear's natural oxygen process requires good water movement in your pool with no "dead" spots and deep glass media filter beds

We HIGHLY recommend only using recycled glass filter media or consol glass media, not Silica course glass media.

Step 9

All pools, whether run on chlorine, salt or e-Clear, may lose water quality from time to time under extreme load, adverse weather or other circumstances. We recommend using a hydrogen peroxide shock, non-metal based algaecide or Polysheen clarifier.

Warning

Do not add Chlorine to your pool while the e-Clear system is powered. This will damage the e-Clear system. Do not add metal based algaecide or metal remover. Whenever adding any chemicals to your water make sure the e-Clear is powered off.

8. Water Balancing INSTALLATION

Once the e-Clear system is installed, proceed to balance the water.

Step 10

With the pool pump running and e-Clear system switched off, adjust the calcium hardness to 200 - 300ppm using calcium flakes (available from your local pool shop). Roughly 8 kg of Calcium Flakes per 50 000L of water renders a calcium residual of 300ppm, if calcium at 0ppm. Calcium should then only be tested once or twice a year.

Have the calcium tested at a pool shop or purchase a calcium test kit from us

Step 11

Adjust the pH to between 6.8-7.2 using hydrochloric pool acid. The water is most stable and copper ionization most effective at 6.8. Try to keep it there! Never allow the pH to rise above 7.2, the copper ions may fall out of suspension and be rendered ineffective, possibly staining your pool. The pH in gunnite or marbelite pools must therefore be maintained more strictly.

Warning

High pH will damage your electrodes and cause a build-up on your electrodes rendering the sanitization process impossible.

Step 12

Switch on the e-Clear system making sure all switches are on and all dials are at 100%. The display should show a blue oxygen reading of between 1.20 - 2.00 and a red ionization reading of between .200 - .350 If lower, check calcium or connections.

Step 13

Once switched on it should take a week or two for the copper residual to rise to the required effectivity level of 0.5ppm. To speed up the process we recommend running your pool pump and e-Clear 24 hours a day. During this time, it may be necessary to shock the water to kill algae and maintain water quality. Use hydrogen peroxide or chlorine.

Step 14

Phosphates are food for algae. They are added to your pool by municipal water, rain runoff, grass, leaves and swimmers. Phosphates should be kept at 0ppb. Use a phosphate remover, available from your pool shop.

Step 15

Test copper residual once a week using supplied copper test kit and adjust using ionic dial as necessary to maintain a residual of 0.5ppm

Step 16

Alkalinity should be kept at around 60-80ppm for best results with the e-Clear system and to maintain stable pH behaviour. A little soda bicarbonate can be added to raise alkalinity to the required level. Not more than 1kg per day. Beware this will also raise your pH.

Step 17

Once your copper level reaches 0.5ppm your pool is running on the patented e-Clear system. Run your pool pump normal hours (around 6-10 hours a day for average sized pools). You should not need to add anything except pool acid to adjust your pH.

Step 18

On a weekly basis- check pH, check copper, backwash and rinse, and perform normal pool maintenance, clean pool of leaves, grass and brush walls.

Happy swimming in your safe, healthy, soft, clean, natural pool water!

8. E-Clear Pump and Filter Guidelines

Domestic Swimming Pools

10m³ – 50m³ Pool

1. Pool pump 0,75 kw/1 hp – 2m head - 20m³/h
   6m head - 16m³/h
   12 head - 10m³/h
2. 3 or4 bag glass media filter
3. Recycled glass media 75% fine and 25% coarse.
4. Suction 50 mm min
   Return 2 x 40 mm or 2 x 50mm

50m³ – 75m³ Pool

1. 1.1 kw pool pump/ 1.5 hp - 2m head – 30m³/h
   6m head – 26m³/h
   12m head – 18m³/h
2. 5 bag glass media filter
3. Recycled glass media 75% fine and 25% coarse.
4. Suction 63mm
   Return 2 x 50mm or 2 x 63mm

75m³ – 120m³ Pool volume

1. 1.5 kw/2hp Pool pump - 2m head – 40m³/h
   6m head – 32m³/h
   12m head – 20m³/h
2. 7 bag glass media filter
3. Recycled glass media 75% fine and 25% coarse.
4. Suction 63m/75m

MAINTENANCE GUIDE

WEEKLY

STEP1: Check and adjust PH to between 6.8-7.2 using Hydrochloric acid
STEP2: Check COPPER and adjust IONIC PROGRAM % DIAL to achieve 0.5ppm
STEP3: Backwash and rinse FILTER
STEP4: Brush pooL WALLS
STEP5: Clean weir basket and pump basket

MONTHLY

STEP1: Visually check MILLIAMP readout on Eclear control box
. OXYGEN- 2.00
. IONIZATION- .300
STEP2: Visually inspect ionization electrode thickness. Should be more than 3mm
STEP3: Check CALCIUM RESIDUAL 250ppm
STEP4: Check electrode plates for dirt/buildup. Clean if necessary using acid
. Solution of 1 part hydrochloric acid to 5 parts water. Immerse chamber for
. 10 minutes. Brush lightly for any stubborn dirt.
STEP5: Chemical wash of filter sand according to manufacturers instructions
STEP6: Check ALKALINITY- 60ppm adjust using soda BICARBONATE
. (NOT SODA ASH) add only 1kg per day until 60ppm residual.

ANNUALLY

STEP1: Check UV LAMPS. Life 10000 hours or 2 years.
STEP2: Change filter sand every 18-24 months

CONSUMABLES

COPPER PLATES- 12-24 months average or replace when less than 3mm thick.
UV LAMPS- lifespan 10 000 hours
COPPER TEST KITS- Replace every 2 years

The e-Clear system is NOT maintenance free BUT IT IS Chlorine free, salt free and ozone free

1. Check copper residual using supplied copper test kit. The test kit will only give true results if the pH is between 6.8-7.2. Adjust copper on e-Clear control box via on/off switch or ionization percentage dial. If test kit shows copper residual to be at the required 0.5ppm then switch off or turn down the copper ionization on the e-Clear control box. If copper residual is below 0.5ppm then switch on/ turn up the copper ionization on the e-Clear control box. The copper MUST be checked and adjusted weekly.

2. Visually check oxygen and copper plates for dirt, build-up and check copper plates thickness. Once they reach under 4mm thick they should be replaced.

8. Annual Maintenance

1. Check calcium level of pool water at pool shop or using e-Clear purchased calcium test kit. Calcium Level should be between 200-300ppm. Calcium is added at e-Clear installation to produce conductivity in the water in order for the plates to pass current between them. Calcium does not get used up or evaporate but only leaves the pool during back washing. Thus only needs to be checked every year.
2. Make sure the blue milliamp reading is between 1.20 - 2.20. And the red reading between .200 - .350
3. Clean the electrodes, if necessary, by removing each electrode chamber and immersing in hydrochloric acid / water solution of 1-part acid to 10 parts water, until the buildup has dissolved. Not more than 20 min.
4. Change pool filter glass media every 18 months. We recommend Consol glass media of grit size 0.6mm-2mm. This is finer than normal pool glass media.

8. Water Parameters

1.

Ideal Water Parameters
pH 6.8-7.2 (preferably 7.0)
ALKALINITY 80-120 PPM
CALCIUM HARDNESS 250-400 PPM
COPPER RESIDUAL 0.5PPM
PHOSPHATES 0 PPB
CYANURIC ACID 0 PPM
TEMPERATURE UP TO 38*C

2. DO'S AND DONT'S

ALWAYS SWITCH THE E-CLEAR SYSTEM OFF BEFORE ADDING ANY CHEMICALS. LEAVE IT OFF FOR 20 MINUTES. IF YOU LEAVE IT ON THE CHEMICALS CAUSE A SUDDEN SPIKE IN CONDUCTIVITY AND WILL DAMAGE YOUR OXYGEN PLATES

ALKALINITY
e-Clear pools need low alkalinity, unlike chlorine pools. This is because our system changes the chemical make-up of the calcium in the water into bicarbonate. Therefore, alkalinity should never need be raised in e-Clear pools after initial setup.

pH and alkalinity are closely linked, alkalinity is defined as the ability of the water to resist pH changes. Therefore, **if your alkalinity is too low you may need to add large amounts of pool acid very often.**

pH
A pH of 6.8 results in more stable water parameters. Never allow pH to rise above 7.2 as this renders the e-Clear's hydrolysis and ionization ineffective.

Prolonged high pH levels or low pH levels may damage your plates and also allow calcium deposits to build up on your plates which will then require removal and manual cleaning in an acid solution. High alkalinity causes the pH to drift upwards quickly.

CALCIUM
Calcium is added at e-Clear installation to produce conductivity in the pool water so that an electrical charge can travel between the electrodes. 250-400ppm is necessary. Have water tested 1 week after installation for calcium.

Too little calcium will prevent proper operation of the e-Clear system. **Low calcium hardness can promote pool corrosion. High calcium can cause the water to appear cloudy.**

PHOSPHATES
Phosphates are food for algae. If you have an algae problem and your copper residual is at 0.5ppm then you may have a phosphate problem. Phosphates are added by leaves, grass and other organic material as well as by people, dogs and clothing washed in certain detergents.
Test the phosphates at a pool shop and add a phosphate remover.
A non-metal based algaecide can be added.
A peroxide based shock may be necessary to kill algae blooms.

ALGAE
Algae blooms occur when pH is lower than 6.8 and higher than 7.2 or the copper residual is lower than 0.5ppm

If algae occurs in your pool, check phosphates, adjust pH, check copper.
Dead spots in your pool where water doesn't move freely, e.g., steps or square corners, are susceptible to algae growth, regularly brush walls in these areas.
Floating or substrate based algae can be controlled by adding non-metal based algaecide said and shocking the water using peroxide based treatments.
Also, check filter glass media, replace glass media if older than 18 months.
Fitting a larger pump and filter will solve almost all algae problems and most water quality issues.

CYCLE TIMES
When water quality is an issue, run the e-Clear system 24 hours a day to clear up the water.
At start up run the e-Clear 24 hours a day until copper residual reaches 0.5ppm
Thereafter run the e-Clear **6-12 hours a day** during daylight hours, under normal circumstances.

FILTER SIZES- MINIMUM

Pools under 50kl- minimum 4 bag filter and 0.75kw pump

Pools 50kl - 100kl - minimum 5 bag filter and 1.1kw pump

Pools 100kl - 150kl - minimum 7 bag filter and 1.5kw pump

No variable speed pumps

The entire pool volume must be able to pass through the filter in 4 hours or less

Use activated crushed glass media in the filter instead of pool sand

CLOUDY WATER

Upon installation, the e-Clear system will descale previous build ups of calcium from your pipes, filter, heater and other pool equipment. This may cause your water to appear cloudy. This should stop in a month or two. If it does not, then consider changing your filter glass media

At start up, running your pool 24 hours a day, it may take a couple of weeks to attain the desired copper residual of 0.5ppm

During this setup period you will need to treat your water with a peroxide based shock to keep the water free of algae and bacteria.

If copper still won't rise, test calcium, if below 250ppm raise using calcium FLAKES.

Copper won't ionize if pH is above 7.4

"My pool water is green..."

Is pH above **7.3**? Reduce to 6.8 using pool acid.

Is copper above 1ppm? Replace 25% of your pool water or add metal remover.

Shock the pool using peroxide based shock

You should never need to add chlorine to the pool but if you must. Add chlorine to a bucket of pool water, stir and let it stand for 10 min. Add water with e-Clear system off. - **Never add chlorine to the pool while the e-Clear system is powered, it will cause an electrical surge and damage your plates.**

8. What can I add to my e-Clear pool

DO NOT ADD

- **Chlorine** - can damage the plates and you!
- **Salt**
- **Zeolite** glass media
- Any **metal based** algaecide
- Hardly ever **soda bicarbonate** except at start up
- Soda ash
- Alkalinity-up products
- Copper powder
- Metal removers
- Gravel filter glass media larger than 2mm grit

YOU MAY USE

- Hydrogen peroxide neat or as part of a peroxide shock
- Flocculant, clarifier or gel block to clear cloudy water from suspended micro solids
- Hydrochloric, muriatic acid to reduce pH
- Calcium FLAKES only, not powder or liquid
- Soda bicarbonate to raise alkalinity initially, not more than 2kgs per day.
- Non-metal based algaecide
- Phosphate removers
- Alum treatment as a flocculant but must be carried out by a professional
- Consol glass filter glass media, grit size 0.6

PROBLEM SOLVING GUIDE

WATER

WALLS

OTHER

CHEMICALS

PROBLEMS WITH WATER

A. WATER

A.1 CLOUDY WATER

REASONS

A.1.1. SAND

CAUSE

Dirty sand – Sand clogged, not catching finer particles.

SOLUTION

Change sand immediately to consul glass fine or recycled glass media.

A.1.2. DE-CALCIFYING WALLS

CAUSE

Years of hard water build up is being dissolved by the eClear's electronic oxidation.

SOLUTION

Decalcification will stop after a few weeks.

A.1.3. HOT WEATHER

CAUSE

Extra swimmers
Extra pollutants.

SOLUTION

Increase the time the pool pump, filter and eCear oxidation runs.
Check conductivity/calcium hardness – 200ppm increase.

A.2 GREEN WATER

REASONS

A.2.1. ALKILINITY

CAUSE

Too low 60ppm below.

SOLUTION

Add baking soda/ soda bicarb. 500g every 4 days until 80ppm-120ppm.

A.2.2. HIGH pH

CAUSE

Above 7.4

SOLUTION

Add HYDROCHLRIC/MURIATIC ACID or SODIUM BISULPHATE.

A.2.3. DIRT IN POOL

CAUSE

Raises pH, increase algae growth, reduce oxidation reduction potential (ORP).

SOLUTION

Clean pool - Brush walls, vacuum bottom, net out leaves, backwash & rinse filter.

A.2.4. UV LAMPS OLD

CAUSE

Waterborne suspended algae leads to water borne suspended algae.

SOLUTION

Add algaecide as per label.

A.3 NOT SPARKLING

REASONS

A.3.1 HIGH TEMPRATURE/ HIGH BODYLOAD

CAUSE

Extra pollution.

SOLUTION

Run pump, filter & eClear longer each day for better filtration & sanitization.
Check calcium/conductivity

A.3.2. SUSPENDED MICRO PARTICLES

CAUSE

Various reasons.

SOLUTION

Run pump, filter & eClear longer each day for better filtration & sanitization.
Check calcium/ conductivity as above.

A.1 CLOUDY WATER
REASONS

A.1.4. HIGHER SWIMLOAD

CAUSE
Extra pollutants to be oxidized.

SOLUTION
Check conductivity/calcium hardness – 200ppm increase

A.1.5. SUSPENDED MICRO PARTICLES

CAUSE
Due to extra swimmers/pollution or dirty sand.
Sand grit too large.

SOLUTION
Add flocculant/gel block or we recommend polysheen blue.
Install finer sand – consul glass (grit 0.6 – 2mm) or glass media.

A.1.6. POOR FILTRATION

CAUSE
Total pool volume turnover is less than every 4 hours perhaps due to roof heating panels.

SOLUTION
Install larger pump & filter to filter total volume every 4 hours, taking into account roof heating panels.

A.2 GREEN WATER
REASONS

A.2.5. LOW OXIDATION

CAUSE
Suspended algae pollutants not being oxidized and feeding algae phosphate.

SOLUTION
Shock pool using chlorine/H2O2 and increase hours the eClear runs per day.
Check calcium hardness – 200ppm.

A.2.6. LOW COPPER RESIDUAL

CAUSE
Copper residual below 0.5ppm thus cannot kill algae.

SOLUTION
Switch ON copper until 0.5ppm is recorded using copper test kit.
Check calcium if copper is always ON yet cannot reach 0.5ppm residual.

B. WALLS

B.1 ALGAE
REASONS

B.1.1. ALKILINITY

CAUSE
Alkalinity too high, above 120ppm. Results in reduced sanitizer efficiency – allowing algae to grow.

SOLUTION
Add small amounts of pool acid over the course of a few weeks to eat up the alkalinity
Brush walls & add algaecide.

B.1.2. DEAD SPOTS IN POOL

CAUSE
No water movement in certain areas of pool due to lack of returns, allowing algae to flourish.

SOLUTION
Install more returns and large pumps.
Brush affected areas regularly
Add algaecide.

B.1.3. LOW COPPER RESIDUAL

CAUSE
Under 0.5ppm allows algae to grow.

SOLUTION
Brush walls and add algaecide.
Switch ON copper to raise.
Check conductivity/ calcium hardness – raise to 200ppm using calcium chloride flakes.
Check if copper plates need replacing if less than 3mm thick.

B.2 STAINS
REASONS

B.2.1. BLACK/GREY STAINS ON WALLS OR PURPLE

CAUSE
Over oxidation stains.

SOLUTION
Run eClear fewer hours per day.
Do not add other oxidizers (chlorine/ bromine peroxide) directly onto walls.

B.2.2. BLACK STAINS

CAUSE
Not a stain but algae.

SOLUTION
Make sure copper residual is 0.5ppm
Add algaecide.
Brush walls immediately.

B.2.3. GREEN/ BLUE SATINS

CAUSE
Very high copper residual and/or high pH has caused copper ions to fall out of suspension and adhere to calcium based substrates.

SOLUTION
TO PREVENT
Make sure copper residual doesn't go above 0.5ppm.
Adjust pH to 6.8-7.2

TO TREAT
Lower pH to 6.8.
Add metal remover

B.3 GROUTING
REASONS

B.3.1. GREEN

CAUSE
Very high copper residual and/or high pH has caused copper ions to fall out of suspension and adhere calcium based substrates.

SOLUTION
TO PREVENT
Make sure copper residual doesn't go above 0.5ppm.
Adjust pH to 6.8-7.2

TO TREAT
Lower pH to 6.8.
Add metal remover

B.3.2. BLACK

CAUSE
Not a stain but algae.

SOLUTION
Make sure copper residual is 0.5ppm
Add algaecide.
Brush walls immediately.

B.3.3. CRUMBLING

CAUSE
Low pH.

SOLUTION
Increase pH to 7.2
Raise alkalinity.

B.1 ALGAE

REASONS

B.1.4. BAD MAINTENANCE

CAUSE

Pollutants not removed releases phosphates which feeds algae growth.

SOLUTION

Brush walls, net out grass/leaves. Vacuum bottom at least weekly.
Add algaecide.

C. OTHER

C.1. SOLAR BLANKETS

CAUSE

Inhibits oxygen being dissolved into the water from the atmosphere thereby lowering the total dissolved oxygen content.

SOLUTION

Use non-solid pool covers or use the eClear oxy-booster valve from increased dissolved oxygen content.

C.2. BUILDUP ON PLATES

CAUSE

Calcium hardness may be too high thus inhibiting the eClear AOP and Ionization functions.

SOLUTION

Clean plates by immersing in acid solution until clean. 1-part acid to 10-part water.
Needs regular maintenance.

C.3. LOW MILLIAMP READOUT

DIRTY PLATES - Clean plates by immersing in acid solution until clean. 1 Acid to 10 pools water. Needs regular maintenance.
LOW CONDUCTIVITY - Add calcium to raise hardness to 200ppm.
COPPER PLATES TOO THIN - If less than 3mm thick - REPLACE

C.4. BURNING EYES

CHLORAMINES - Install UV lamps which destroys chloramines.
LOW ALKALINITY - Raise by using soda bicarb.
HIGH ALKALINITY - Lower using pool acid.

C.5. STRONG SMELL

CAUSE

High chloramines.

SOLUTION

Install UV system.

C.6 HIGH ACID DEMAND

CAUSE

High alkalinity

SOLUTION

Alkalinity is too high. This is normal on new plaster pools for up to 1 year, solution lower total alkalinity to about 60ppm.

D. CHEMICALS

D.1. CHEMICALS TO NEVER USE

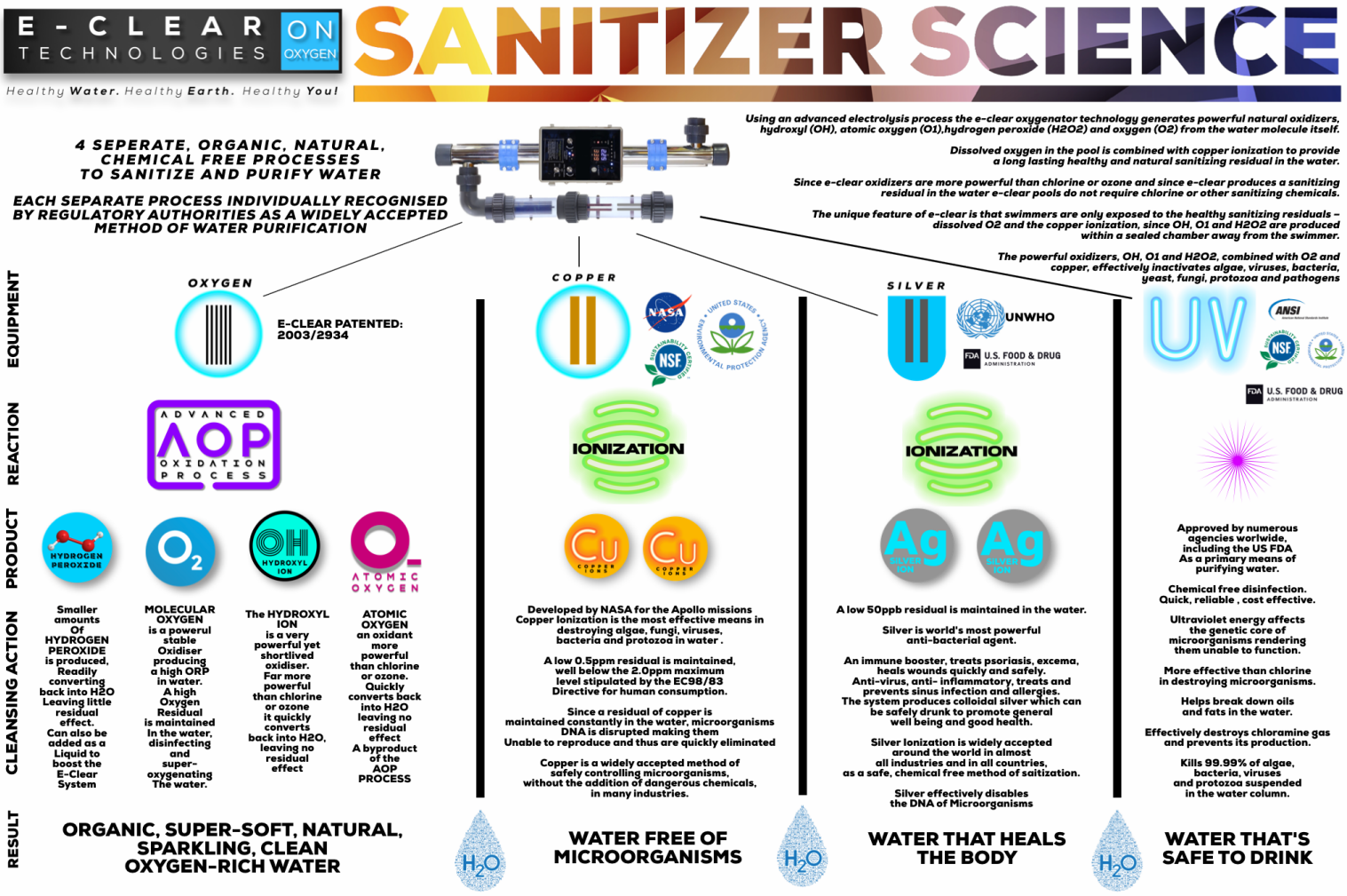
ZEOLITE - Absorbs copper ions.
SALT - Not necessary.
METAL BASED ALGAECIDE - Gives false copper test reading.
SODA ASH - Raises alkalinity too much.
COPPER POWDER - Gives false copper test results.
LARGE GRIT FILTER SAND - Will leave water cloudy.

D.2. CHEMICALS YOU MAY USE

FLOCCULANT - To clear cloudy water.
Generic gel blocks add as per label instructions.
Polysheen – Highly recommended, highly concentrated.
HYDROCHLORIC/MURIATIC ACID/ CITRIC ACID - Lowers pH.
CALCIUM CHLORIDE FLAKES (ONLY) - To raise conductivity and thereby increase eClear milliamp reading
PHOSPHATE REMOVER - As per instructions.
HYDROGEN PEROXIDE - As per instructions.
CHLORINE - Mix thoroughly and pour into weir. Switch eClear OFF when adding.
GLASS MEDIA - More efficient than sand. Filters out smaller particles than sand.
SODA BICARBONATE - Add NO MORE than 1kg per day to raise alkalinity.
ALGAECIDE - ONLY Non-metal based algaecides.
SILICA SAND - Fine grit 0.6-2mm
OXALIC (STAIN REMOVER) - To remove oxidation stains.
CYANURIC (STABILIZER) - Has no effect on eClear pools.
SODIUM HYPOCHLORIDE - As directed on shock treatment.
OXICLEAR - Non-Chlorine shock 30g/10000L per week.

SECTION 10:

SPARE PARTS



SPARE PARTS

OXYGENATION AND IONIZATION

MK-75

QUANTITY	UNIT	LIFE SPAN
2	63mm IONIZATION ELECTRODES	1-3 YEARS

MK-150

QUANTITY	UNIT	LIFE SPAN
2	90mm IONIZATION ELECTRODES	1-3 YEARS

MK-250

QUANTITY	UNIT	LIFE SPAN
4	90mm IONIZATION ELECTRODES	1-3 YEARS

MK-500

QUANTITY	UNIT	LIFE SPAN
8	90mm IONIZATION ELECTRODES	1-3 YEARS

MK-750

QUANTITY	UNIT	LIFE SPAN
12	90mm IONIZATION ELECTRODES	1-3 YEARS

MK-1000

QUANTITY	UNIT	LIFE SPAN
16	90mm IONIZATION ELECTRODES	1-3 YEARS

ULTRAVIOLET REACTION CHAMBERS

SINGLE UV

QUANTITY	UNIT	LIFE SPAN
1	55 WATT UVC HIGH SPECTROTHERM LAMP	10 000 HOURS

TWIN UV

QUANTITY	UNIT	LIFE SPAN
2	55 WATT UVC HIGH SPECTROTHERM LAMP	10 000 HOURS

QUAD UV

QUANTITY	UNIT	LIFE SPAN
4	55 WATT UVC HIGH SPECTROTHERM LAMP	10 000 HOURS

1. OXYGENATION, IONIZATION AND UV

MK-75UV

QUANTITY	UNIT	LIFE SPAN
2	63mm IONIZATION ELECTRODES	1-3 YEARS
1	55 WATT UVC HIGH SPECTROTHERM LAMP	10 000 HOURS

MK-150UV

QUANTITY	UNIT	LIFE SPAN
2	90mm IONIZATION ELECTRODES	1-3 YEARS
2	55 WATT UVC HIGH SPECTROTHERM LAMP	10 000 HOURS

MK-250UV

QUANTITY	UNIT	LIFE SPAN
4	90mm IONINIZATION ELECTRODES	1-3 YEARS
4	55 WATT UVC HIGH SPECTROTHERM LAMP	10 000 HOURS

MK-500UV

QUANTITY	UNIT	LIFE SPAN
8	90mm IONIZATION ELECTRODES	1-3 YEARS
8	55 WATT UVC HIGH SPECTROTHERM LAMP	10 000 HOURS

MK-750UV

QUANTITY	UNIT	LIFE SPAN
12	90mm IONIZATION ELECTRODES	1-3 YEARS
12	55 WATT UVC HIGH SPECTROTHERM LAMP	10 000 HOURS

MK-1000UV

QUANTITY	UNIT	LIFE SPAN
16	90mm IONIZATION ELECTRODES	1-3 YEARS
16	55 WATT UVC HIGH SPECTROTHERM LAMP	10 000 HOURS

1. Can you trust eClear™

eClear Technologies has been making eClear™ systems for over 20 years. We export to around 30 countries worldwide, with more than 25 000 installations.

eClear's natural oxygenator (O2) technology delivers over 40,000g oxidation/hr making it the most powerful water treatment system currently available. Unlike chlorine systems, eClear generates no harmful chloramine gas or toxic disinfection by products (DBPs).

Using and advanced electrolysis process the eClear oxygenator technology generates powerful natural oxidizers, hydroxyl (OH), atomic oxygen (O1), hydrogen peroxide (H2O2) and oxygen (O2) from the water molecules itself.

The powerful oxidizers, OH, O1 and H2O2 combined with O2 and copper, effectively inactivates algae, viruses, bacteria, yeast, fungi and protozoa.

The wars of the next 20 years will be fought over water. Fact. Many countries face water shortages and water throttling, including South Africa, starting in 2016.

An average house roof in South Africa catches and wastes around 120 000l of rainwater per year. About half of a large families' annual consumption (250 000l). Besides saving money, when the water goes off in your neighbourhood, you can have uninterrupted, full pressure, drinking water at every tap in your home. You won't even know the municipal water is switched off!

The eClear eco-fusion rainwater harvesting system incorporates everything necessary, as a kit, to fully harvest all the rainwater from your home's roof, then sanitize it and deliver high pressure, fully purified drinking water to your entire home, no matter how large.

It is made up of the 7 stage Eco-Fusion water sanitization purification system, along with a 10 000l storage tank and an optional extra 5 000l storage tank, as well as all the necessary pumps, pipes and valves. You also have the option of filling up the tank with municipal water during the non-rainy season in case of water throttling.

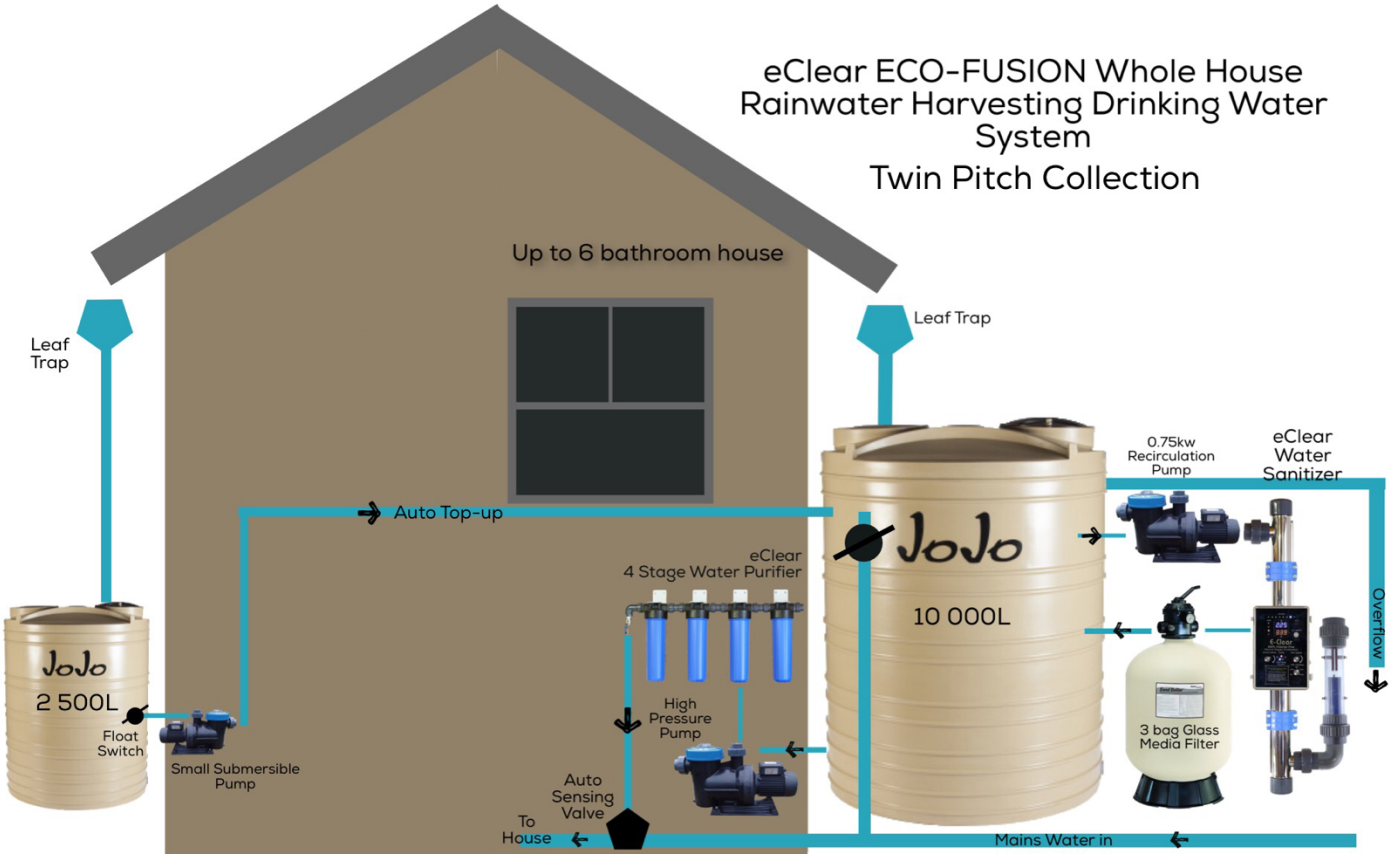
The recirculation system incorporating the patented eClear technology will keep your water clean by only having to run the recirculation pump about 1-2 hours a day. Water is a necessity. However, it isn't guaranteed anymore. Take control of your water needs, don't rely on anyone else to do so. The eClear eco-fusion rainwater harvesting system does just that.

Healthy Water. Healthy Earth. Healthy You.

E-CLEAR ECO-FUSION™

RAINWATER HARVESTING KIT

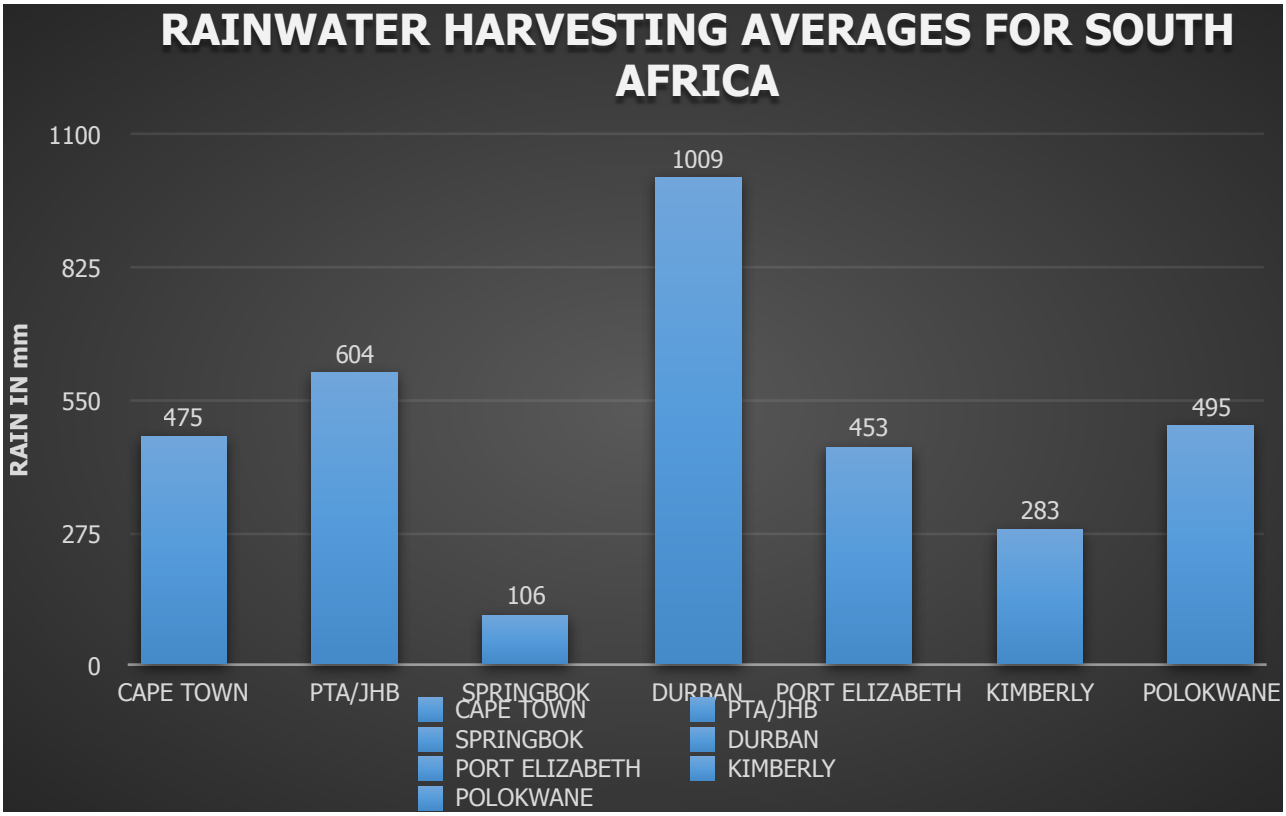
11. E-CLEAR ECO-FUSION™ RAINWATER HARVESTING KIT



11. RATER HARVESTING AVERAGES FOR SOUTH AFRICA

*Based on 180m² home M74 12/12 pitch roof.

*1mm of rain = 1 Liter of water per square meter of roof area, minus 15% wastage.



11.**SPECIFICATIONS FOR RAINWATER HARESTING KIT**

Please See Whole House Specifications as above Pages 45 - 52

11.**10 000L STORAGE TANK**

On concrete base

11.DAVEY 600KPA 90L/M PUMP

Horizontal multistage centrifugal pump with all hydraulic parts in stainless steel. High pressure, high flow. The best household pressure system pumps on the market

11.DAVEY RAINBANK/TORRIUM SENSOR VALVE

Torrium2 controlled HM Series provides a constant flow water supply system with an all stainless steel pump unit. The Torrium2 is adaptive, eliminating cycling, provides loss of prime protection and over temperature cut out.

11.3 BAG GLASS MEDIA FILTER

With recycled glass media, super fine grit to remove suspended matter more efficiently.

11.0.75KW POOL PUMP

Standard economical recirculation pool pump

11.**ADDITIONAL 5000L STORAGE TANK. ADDITIONAL DAVEY 0.75KW SUBMERSIBLE PUMP**

1.**e-CLEAR™ HIGH OUTPUT OXYGEN & COPPER IONIZATION CHAMBER**