

Wallace & Tiernan® UV systems for reduction of chloramines in swimming pools

Barrier® M UV systems

SIEMENS

Barrier® M UV systems

Barrier® M UV systems provide a cost-effective, reliable, operator-friendly chloramines reduction solution for pool water treatment installations.

A typical problem for indoor pools is the so-called "pool smell" which is a synonym for a poorly performing water treatment system.

Chloramines (or combined chlorine) result from the reaction between free chlorine and ammonia. Ammonium is introduced to the water predominantly by swimmers.

For the breakdown of chloramine, the spectrum of the UV lamp used is very important. Depending on the type of chloramine, different wavelengths are required for the photolysis process such as:

- Monochloramine - 245 nm
- Dichloramine - 297 nm
- Trichloramine (nitrogen trichloride) - 260 & 340 nm

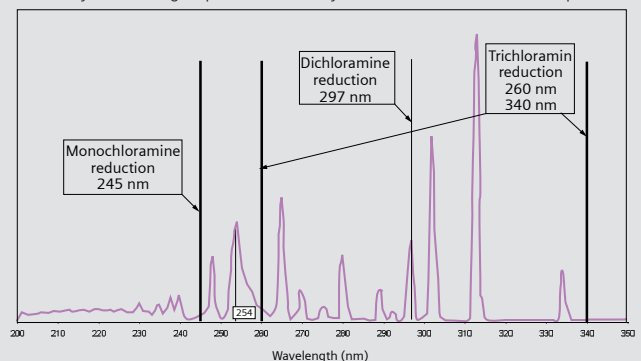
Barrier® M systems are equipped with medium pressure UV lamps as standard which have a wide energy spectrum range - providing the perfect solution to break down combined chlorine effectively and economically. In addition to being used for chloramine reduction, Barrier® M systems will also improve the microbiological water quality because UV is also a very effective technology for the inactivation of bacteria, viruses and protozoa such as Cryptosporidium and Giardia.

Design of system

The heart of Barrier® UV systems is the treatment chamber which is equipped with WTL high-performance UV lamps, optimally arranged in the chamber to suit each individual application. The UV systems can be mounted in both horizontal and vertical piping systems.

The chamber is designed to ensure an optimal effect of the water to be treated. The pressure loss in the device is extremely low due to the hydrodynamic design and the low number of UV lamps. Special care has been taken in the design of the system to ensure optimum maintenance accessibility.

Polychromatic Light Spectrum Emitted by Barrier® M Medium Pressure Lamps



Barrier® UV system benefits:

- Proven chloramine reduction effectiveness
- Significant improvement of the pool environment air quality
- Reduction in water and energy costs
- Better overall water quality
- Simple and low-cost installation. Easy retrofit and service, low head loss and compact plus small footprint with in-line reaction chamber
- Extended lamp life and low lamp replacement costs



Selected UV systems for chloramine reduction in pool applications

An overview of selected systems is listed below.

Model	Lamps	UV Lamp	Connection flanges		Capacity/flow rate*	
			ROW	US	[m ³ /h]	[USGPM]
Barrier M 35**	1	WTL1000	DN 80 acc. DIN 2576	3" 150-lbs ANSI	19	84
Barrier M 80	1	WTL1000	DN 125 acc. DIN 2576	5" 150-lbs ANSI	39	172
Barrier M 135	1	WTL2000	DN 125 acc. DIN 2576	5" 150-lbs ANSI	61	269
Barrier M 275	1	WTL2000	DN 200 acc. DIN 2576	8" 150-lbs ANSI	119	524
Barrier M 525	2	WTL2000	DN 200 acc. DIN 2576	8" 150-lbs ANSI	176	775
Barrier M 700	3	WTL2000	DN 200 acc. DIN 2576	8" 150-lbs ANSI	295	1299
Barrier M 1300	3	WTL2000	DN 350 acc. DIN 2576	14" 150-lbs ANSI	507	2232
Barrier M 1400	2	WTL3500	DN 350 acc. DIN 2576	14" 150-lbs ANSI	524	2307
Barrier M 1700	4	WTL2000	DN 350 acc. DIN 2576	14" 150-lbs ANSI	653	2875
Barrier M 2000	3	WTL3500	DN 350 acc. DIN 2576	14" 150-lbs ANSI	750	3302
Barrier M 2600	4	WTL3500	DN 350 acc. DIN 2576	14" 150-lbs ANSI	974	4288

*Capacity at UV dose of 600 J/m² (60mJ/cm²) at end of lamp life, transmittance T₁₀ = 95%, chloramine reduction in pool approx. 50% when system is operated continuously in full flow conditions.

**Only available with a manual cleaning mechanism

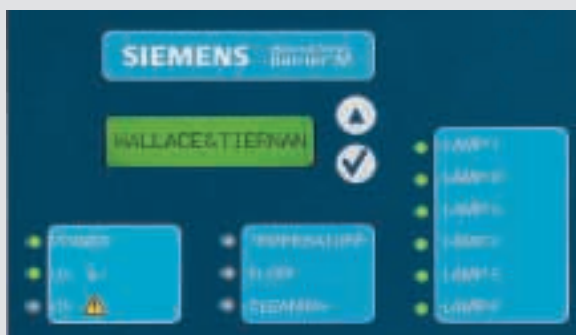
UV sensor

A UV sensor monitors the disinfection process continuously by measuring the UV-C intensity inside the UV chamber. The measured absolute values are displayed on the control panel in W/m² or %. In the case of a UV alarm, both a dry contact and an indication on the display will be activated.

The UV sensor is factory calibrated and, due to the high quality optical components which are used, is a reliable tool to monitor the disinfection process. The UV sensor is positioned in the wall of the chamber and is in direct contact with the process water.

Cleaning mechanism

To remove deposits and other fouling from the quartz sleeve(s) and UV sensor, a specially designed, optional cleaning mechanism cleanses the system during the disinfection process. Both manually and automatically operated versions are available for most models. The operation of the automatic cleaning mechanism is controlled by the UV sensor, an implemented timer or by the operator, if preferred.



Barrier® M System Display

Barrier® M UV systems

Barrier® M UV systems are equipped with Wallace & Tiernan® medium pressure UV lamps. These high power lamps emit a wide spectrum of UV energy which is very effective in disinfecting the water and also in blocking the possible photoreactivation of the microorganisms. The medium pressure UV lamps result in a very compact treatment chamber design with a small footprint able to treat large water flows.

Control panel

A Barrier® UV system is controlled by a panel of painted steel as standard, with stainless steel as an option. Each individual UV lamp is monitored and the status is displayed by an LED indicator. For other alarm signals, such as UV alarms, separate LED indicators are available on the display. The display also has a 16 character LCD screen to show information about the system parameters, utilising two buttons, a user-friendly, easy to operate, interface has been created.

In addition to the display for local control, the control panel has dry contact inputs and outputs present for remote control. Several serial communication options are also available.

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