

# MP RANGE Electrochlorinators

25 to 400 g/hr

## Clean, safe water at the touch of a button

To enjoy the benefits of a swimming pool or spa, the quality of the water is of paramount importance. A major defence against water born microorganisms is Chlorination, the disadvantage of using commercially supplied Sodium Hypochlorite is the need to have bulk supplies, which need to be stored and handled safely. The MP range of on-site electrochlorinators helps you eliminate these problems giving you an on-demand system providing a better working environment in your plant room. Clean, Clear, Safer water to enjoy.



### Benefits of using Electrochlorination in your pool

- Excellent water quality
- A pleasant bathing environment
- Treatment of complete re-circulating water flow
- Simple and easy to maintain
- Does not require daily maintenance
- Range of sizes to suit different demands
- Wall mounted compact design
- UPVC electrolyser and degassing column fitted to control panel.
- Force air ventilation through control panel and electrolyser assembly
- Colour coded display indicates systems status at a glance.
- Safe and reliable method of producing chlorine on-site
- Common salt as base material is nontoxic, easy to store and to handle.
- Low operating costs, world-wide use
- Fresh hypochlorite is always at hand
- Approved disinfection method complying with the drinking water regulation

# Electrochlorination

## Clean, safe water at the touch of a button

### Application

The MP range of electrochlorinators is a modular design, compact enough to fit into any circulating water treatment system in a swimming pool or spa. It will generate, on demand, a low strength Sodium Hypochlorite solution suitable for any swimming pool or spa.

The MP range will produce from 25g/hr to 400g/hr depending on the model chosen allowing most sizes of pools or spas to be treated.

### Electrochlorination:

The process of generating Sodium Hypochlorite Solution from three commonly available materials: Salt, Water and Electricity.

This simple process occurs when a salt solution flows between a series of electrodes. A DC voltage applied to the electrodes causes a current to pass through the salt solution, which results in a chemical reaction, producing a safe to use low strength Sodium Hypochlorite Solution. The solution can be stored in a product tank and used in the same way as a commercial Sodium Hypochlorite.

This on-demand process reduces the need to store large volumes of hazardous disinfection on site and at a considerably safer concentration.

The low strength solution has the benefit of a neutral pH compared to other forms of disinfection chemicals.

This can be advantageous where maintaining a pH is important such as in swimming pools.

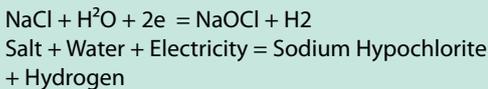
Additionally electrolytically generated Sodium Hypochlorite solution does not degrade or "gas off" as commercial Sodium Hypochlorite.



## How it works

The process of "On-Site Generation" of sodium hypochlorite is accomplished by combining sodium chloride (NaCl), water (H<sup>2</sup>O) and electricity within an electrolytic cell. The produced solution has a concentration of approx 0.85% by weight with approximately 7g/l of free chlorine.

The following equation illustrates the electrochemical reaction which takes place.



As opposed to commercial hypochlorite, which has a strength of approx 12-15%, the on-site generated sodium hypochlorite has a much lower off-gassing as a result of degradation, causes minimal scaling and crystallisation at feed points, and a much lower impact on finished water pH.

On-site generation process starts with a concentrated brine solution. This is created by saturating pure vacuum dried salt into soft water solute to create a concentrated brine solution of approx 315g/lit.

The solution is then filtered and mixed with softened water to produce the electrolyte needed to allow the efficient transfer of salt to sodium hypochlorite. The soft water and saturated brine solution flow rates are controlled by two peristaltic pumps, and the two solutions are mixed before entering the electrolytic chamber.

The electrolytic chamber consists of 4 bi-polar electrolytic cells, which once fully submerged allow current to pass through the electrolyte forming Sodium hypochlorite and hydrogen from the electrolyte solution.

The hypochlorite solution passes immediately into a degassing column to ensure 95% of the total hydrogen produced is removed from the solution before it is passed onto the sodium hypochlorite storage tank.

Due to the explosive nature of Hydrogen both the electrolytic chamber and degassing column of the Electrochlorinator are constantly purged by air to ensure that any hydrogen leaks are immediately reduced to below the Lower Explosive Limit (LEL) of hydrogen. This air jacket then flows out of the Electrochlorinator surrounding the hydrogen ventilation hose and dilutes the produced hydrogen below the LEL before it is safely vented from the building.

By this method any risk of ignition of the hydrogen produced is removed both from the basic operation of the Electrochlorinator or by the failure of any sealing component within the Electrochlorinator.

Throughout the electrolytic process, softened water produced within the unit is used to ensure the longevity of the system and prevent scale depositing on the surface of the electrodes. The softened water is used in two processes (a) it dissolves food grade salt in a brine tank (b) dilute the brine solution to a concentration which is suitable for the electrolytic process.

The diluted brine solution flows between 4 bi-polar electrodes within an electrolytic cell. The chemical reaction to generate the Sodium Hypochlorite is then initiated as a DC voltage is applied across the electrodes causing the conversion of the brine into Sodium Hypochlorite.

The Sodium Hypochlorite flows into a second chamber, where the by-product (Hydrogen Gas), is separated from the solution and safely vented to atmosphere.

## System Summary:

Electrical Requirements:	230VAC, Single Phase, 50Hz
System Water Requirements:	
Water temperature	8°C to 15°C
Water pressure	3 to 6 bar at inlet to the water softener
Ambient Air Temperature:	5°C to 40°C
Salt Requirements:	Pure dried vacuum salt, free from flow binders
Control Panel:	Steel construction, featuring a HMI (Human Machine Interface) touch screen, featuring on-screen diagnostics for operator fault finding.
Electrolyser Power Supply	Highly efficient switch mode, providing reliable DC power supply to the electrolyser.
Water Softener	Duplex softener, with twin softener resin beds and automatic resin regeneration.

# MP RANGE Electrochlorinators

ideal for any size pool



## SYSTEM OPERATING PARAMETERS

Model	MP25	MP50	MP100
Capacity	25g/hr	50g/hr	100g/hr
Solution Strength	0.65% to 0.8%		
Weight	20kg	20kg	20kg
Soft Water	4.2 l/hr	8.1 l/hr	15.5 l/hr
Brine Flow	0.4 l/hr	0.8 l/hr	1.5 l/hr
Hypochlorite Flow	4.6 l/hr	8.9 l/hr	17 l/hr
Typical Salt Consumption (During Operation)	100g/hr	200g/hr	400g/hr
Typical Power Consumption (During Operation)	140watts/hr	280 watts/hr	560 watts/hr

Model	MPX200	MPX400
Capacity	200g/hr	400g/hr
Solution Strength	0.65% to 0.8%	
Weight	25kg	25kg
Soft Water	35 l/hr	70 l/hr
Brine Flow	3.5 l/hr	7.1 l/hr
Hypochlorite Flow	38.5 l/hr	77.0 l/hr
Typical Salt Consumption (During Operation)	800g/hr	1.6kg/hr
Typical Power Consumption (During Operation)	1.1 kW/hr	2.2kW/hr

**Meddings Thermalec Ltd.**  
 Kingsley Close  
 East Way  
 Lee Mill Industrial Estate  
 Ivybridge  
 Devon PL21 9LL  
 England

Telephone +44 (0) 1752 313343  
 Fax +44 (0) 1752 313353  
 E-mail [info@thermalec.co.uk](mailto:info@thermalec.co.uk)  
 Web [www.thermalec.co.uk](http://www.thermalec.co.uk)

**THERMALEC**<sup>®</sup>  
 POOL & SPA PRODUCTS



follow us  
on twitter