

## A new standard method to evaluate efficiency and capacity of pools and spas filters

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### ABSTRACT

Aesthetic quality of pool and spa water is a major reason for their commercial success. It is directly linked to the amount of particles and colloids in suspension in water, the smaller the colloids the more troubled the water.

In facilities open to public, health requirements are guaranteed by dosing and keeping disinfectants at the appropriate level, generally in their free form. The amount of e.g. free chlorine is attained only once injected chlorine has been consumed to oxidise all organic matter, mainly on the suspended solid and colloidal forms.

Thus pool and spa water clarification is required to ensure bathing comfort and health.

The most efficient and economic water clarification technique is filtration. It may be achieved using filters with depth media such as sand, precoats such as diatomaceous earth or cartridges, cleanable cartridges being more suitable to the treatment of small volume pools and spas.

Quality of filters and filtering media is mainly quantified by three parameters:

- a) Resistance to flow, i.e. the pressure drop generated at a given flow rate which depends on the characteristics of the filter, of the media and its degree of clogging.
- b) Filtration efficiency, i.e. the ability to retain particles which is a function of several conditions and varies with time.
- c) Retention capacity, i.e. the amount of solid and colloidal contaminants captured on or within the filtering media before it reaches a given differential pressure requiring washing of the media or replacement of filtering element.

The lecture will review principles, equipment and protocols and standard methods used by some professionals to determine the quality of filtering media and filters.

New criteria for test equipment validation are proposed. Typical test results are presented. Interest of a new protocol of efficiency measurement using on line particle counting is discussed and illustrated by comparative trials results obtained on cartridge, pre-coat, sand and other granular media pools and spas filters.