



CHOICE OF FILTERS FOR PUBLIC POOLS

A paper for the Australian Aquatic Industry
enabling better informed decisions
about pool filter performance

*Only **ONE** world standard for public pool filter exists;
It's about time Australia started using **DIN-19643** filters!*

Background

JH Cockerell, is Australia's leading specialist aquatic engineering firm. Established in 1979 we are the only firm to guarantee a commitment to quality by using the proven international design standard for public pool water treatment (DIN 19643).



- Australian owned
- 2nd gen family business
- 45 years experience
- Trusted aquatic auditor
- International conference speaker & panellist.

Public Pool Filtration in General

In 2019, both Queensland Health and Victoria Health issued a new set of "Water Quality Guidelines for Public Aquatic Facilities". Most notably, the guidelines now conclude correctly, that **effective filtration is an essential pre-treatment** for effective disinfection! In other words, without using quality pool filters, no amount of chlorine will keep swimmers safe from the health risks of pathogens!

To date the performance of public pool water treatment in Australia's public pools has not been well understood, not even by public pool operators or swimming community groups. Given the wide range of variables that continuously influence the dynamic and complex aquatic environment, this is perhaps not surprising.

Other countries, particularly in Europe, have had regulated standards for the design, manufacture and operation of public pool filtration for decades, and it is time for Australia to step up, particularly for new pools being built.

What makes a good filter

The performance of a public pool filter can be easily measured and confirmed with the aid of a turbidity meter which is now a daily record keeping requirement of the Health Department guidelines.

Whilst turbidity of water in a pool may vary from day to day, due to the prevailing atmospheric conditions and load of pool users, turbidity of water leaving a well designed and operated filter should always be less than 0.1NTU. Higher turbidity readings notify the water treatment plant operator that filter backwashing is overdue.

For compliance with the State Government guidelines, pool water turbidity must be no higher than 1.0NTU, but ideally less than 0.5NTU. In order to achieve these results in the pool, DIN 19643 requires turbidity of water leaving the filter be less than 0.1NTU.

In the experience of our practice, auditing and reporting on the condition of hundreds of public pools, we have concluded that the vast majority of Australian public pools, regularly exceed the required measurements for turbidity.



Commonly used filters compared

Rapid Sand Filters	Precoat Filters
<p>Requirements DIN 19643 The design and manufacture of rapid sand filters shall meet the requirements specified in DIN 19605.</p> <p>Filters shall be fitted with at least one sight glass, enabling the surface or separating layer of any filter material to be observed during filtration and backwashing.</p> <p>The inflow of raw water into the filter as well as the filter design shall ensure even flow through the filter.</p> <p>Water leaving the filters shall have a turbidity of less than 0.1NTU.</p>	<p>Requirements DIN 19643 The design and manufacture of precoat filters shall meet the requirements specified in DIN 19624.</p> <p>The filter media shall be evenly deposited on the entire filter cloth surface. (In Australia, sunscreen washed off pool users has made this difficult, if not impossible, particularly for outdoor pools).</p> <p>Water leaving the filter shall have a turbidity of less than 0.1NTU.</p>
<p>Filter capabilities Rapid sand filters can filter out suspended contaminants down to about 12 microns in size. With the use of a flocculant and the addition of other media on top of the sand bed, contaminants significantly smaller than 1 micron, together with chlorine by-products and phosphates which feed algae can also be removed from pool water.</p>	<p>Filter capabilities With perlite media, precoat filters can filter out suspended contaminants down to about 3 microns. With the addition of a layer of powder activated carbon, sandwiched between two layers of perlite, precoat filters can also filter out chlorine by-products but not phosphates. By all reports, the addition of a layer of powder activated carbon is both difficult, expensive and therefore rarely used.</p>



Commonly used filters compared - cont'd

Rapid Sand Filters	Precoat Filters
<p>Backwashing to DIN 19643-1 For hygiene reasons, the filter shall be backwashed at least once a week.</p> <p>The space above the filter bed shall be at atmospheric pressure throughout the backwashing procedure. (This is obviously confirmed when the filter's top access hatch has been removed, prior to commencement of backwashing.)</p> <p>After every backwash, the filter flow resistance shall be equal to that of the new filter. If this is not the case, backwashing shall be repeated.</p>	<p>Backwashing to DIN 19643-1 Surfaces of precoat filters shall be cleaned by rinsing or spraying. Filter cleaning should be carried out depending on the pollution load, but at least once a week for hygienic reasons. The precoat material removed by rinsing shall be discarded and replaced by new material before the water treatment circulation system is restarted.</p> <p>Bumping to allow regeneration of perlite is not permitted as it increases the use of chlorine and creation of chlorine by-products.</p>
<p>Backwashing to DIN 19643-2 Flow rates will depend on the combinations of media used and on the filter design. These will be specified by the manufacturer and verified on-site, as required. In this context it is important to note that higher flow velocities are required for larger particle sizes and higher backwash water temperatures.</p> <p>Unhindered flow of backwashing waste water out of the filter is to be ensured. This allows removal of the filter's top access hatch, prior to commencement of backwashing, to allow visual inspection during backwashing.</p>	<p>Backwashing to DIN 19643-2 The filter media is always discarded together with the backwashing waste water when the filter is backwashed, to eliminate the risk of the filter becoming microbiologically contaminated and minimise use of chlorine and creation of chlorine by-products.</p>



Conclusion

Without good filtration of all the water in a pool, pool users continue to be exposed to unnecessary, avoidable health risks.

Without the use of efficient filters, chlorine does not effectively control pool water pathogens and increases the creation of chlorine by-products, adding to health risks.

Now that Queensland Health and Victoria Health Water Quality Guidelines for Public Aquatic Facilities recommend turbidity be measured daily, public pool owners and operators have an opportunity to exercise their duty of care for the health and safety of swimmers, particularly for infants and young children in learn-to-swim pools.

When filters become blocked with use over time, or otherwise perform poorly, operators and owners need to understand that no amount of chlorine or secondary water treatment (UV, Ozone, etc), compensates for sub-standard primary water treatment.

Recommendation

The solutions are simple and often times, a number of affordable alternatives exist to effectively improve public pool water quality and significantly reduce health risks for all swimmers.

Please contact us for an obligation free discussion.



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