Filtration

Clear, sparkling swimming pool water with the sunlight glistening on its surface is an invitation almost too irresistible to children and adults alike. But what if the sunlight does not glisten and the water appears flat, dull and lifeless?

This lacklustre effect is caused by a build up of impurities and dirt and is a problem that can affect any pool, no matter how beautifully designed and constructed it is, if an adequate filtration system has not been installed.

Pool filtration is a simple, yet important, process; and a correctly installed filter will help ensure grime and grit-free bathing and peace of mind for years to come.

Water is pulled from the top of the pool through outlets called skimmers and from the bottom through outlets called drains or sumps. The water then passes through a pump strainer basket which catches larger debris, and then into the filter where a filtration medium such as sand removes smaller particles, before the water is pumped back into the pool via inlets.

The best size of pump and filter used for a pool is determined using a calculation that takes into account the shape and size of the pool, the volume of water it contains and how often it is used. The filtration rate (the amount of water passing through a given area of filter medium) and the turnover time (the theoretical amount of time it takes for the contents of the pool to pass through the filtration system) can then be calculated.

Timers can be included which operate the filter automatically and other accessories can be added to help keep the water in prime condition.

There are two main types of filter in current use in domestic pools: **Sand filters** and **cartridge filters**.

Sand filters are the most popular type, mainly due to ease of installation, reliability, simple maintenance and general cost-effectiveness. Sand filters can be made of steel, thermo-plastic or fibreglass. It is the thermo-plastic and fibreglass types which are most commonly found in pools because of their non-corrosive properties and serviceability. However, each type has its strengths depending on the conditions it is called upon to handle.

As the name suggests, the filtration medium in these units is usually sand, a particular grade of very fine silica sand which should always be purchased through a swimming pool specialist. Dirt captured in the sand gradually builds up and the resulting back pressure is monitored by a pressure gauge, indicating the effectiveness of the filter and when the medium should be cleaned.

Cleaning or backwashing the sand is a simple process, achieved by switching off the pump and altering the position of a rotary or multiport valve, turning the pump back on and thereby reversing the water flow. This expands and agitates the sand bed and the water carries dirt particles away to a waste outlet. Depending on how much the pool is used, the whole process only takes a few minutes and may only be needed about once a week in the peak season.

Cartridge filters force the water through a man-made filtration material. This is known as 'cartridge' as the original material was heavy duty cartridge paper. The passage through the cartridge traps the debris and cleans the water. As with the sand filter, when the pressure rises they must be cleaned and reset to maintain their efficiency. This is simply done by switching off the pump, removing the cartridge, soaking the element in acidic degreasing cleaning agents and washing it down before allowing it to dry, replacing it and switching it on again. Thus, two sets of cartridge filter elements are usually an advantage. Generally speaking a domestic filter should be cleaned once a week.

It is also important to remember that the purpose of a filter is to remove dirt and debris and not to chemically treat the water; that is a separate function and is covered in Factsheet 12. For any filtration queries don't hesitate to contact your SPATA member for advice.