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### Sand Filters:

These filters are the oldest filtration system known to man. The traditional sand filter, such as the Hayward Pro Top Mount or the Pentair Triton II, has a large central chamber filled with sand/gravel through which water is circulated.

The sand filter of old has been replaced by “high-rate sand filters” that use smaller sand and no gravel. An advantage to these filters is that they typically trap particles in the range of 20 to 100 microns in size.

Although they may keep costs down, they do have disadvantages. They need to be backwashed frequently (approximately once every two weeks), and the effectiveness of the filter can be drastically reduced if the sand isn’t replaced at least once every 5 years.

Another factor that can interfere with the effectiveness of the filter is the bather load. The lower the number of bathers the better it performs. As circulation systems become more advanced and filtration expectations rise, the sand filter is becoming a much less effective option.

### Diatomaceous Earth (DE) Filters:

Although they are similar in design to the traditional sand filters, the central chamber of the DE is more cylindrical and filled with grids that are designed to be coated with diatomaceous earth.

DE is an extremely fine powder made from the skeletons of microscopic prehistoric organisms. The complex structure of these organisms results in a finer filtration. These filters trap particles as small as 3 to 5 microns in size. This is a significant step up from the sand filters.

The Hayward Pro-Grid and the Sta-Rite systems are good examples of DE filters. The greatest advantage of the DE filter is that it is suited for pools with a high bather load.

Some of the disadvantages of the DE are: a) DE is harmful to humans, therefore a mask must be worn to prevent inhalation and it must be disposed of in an approved manner, b) DE filters require more backwashing than the sand or cartridge filter, and c) they are more expensive to maintain.

### Cartridge Filters:

Cartridge Filters, such as the Hayward Swim Clear and the Pentair Clean & Clear, are the most common filtration systems for residential pools.

These filters strain water through compact arrays of pleats that catch particles between 5 to 15 microns in size. They are more efficient than the DE or sand filter in pools with low bather loads.

Some advantages of the cartridge filter are: a) they are more resistant to breakdowns and clogs, b) they are easier to clean than the sand filter, and c) they don’t require backwashing.

The biggest disadvantage, which comes with this type of filter, is that if cleaning is not performed regularly the filter has a tendency to clog.

This can especially be a problem in pools with high bather loads. These filters are best suited for pools with low to moderate bather loads.

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