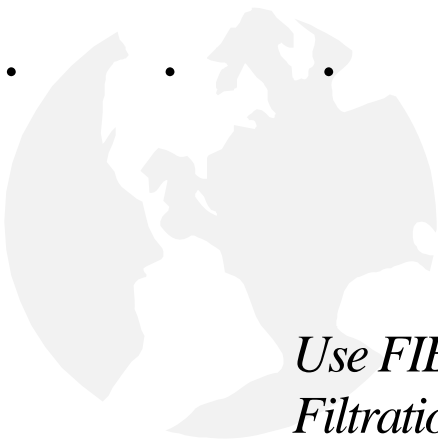




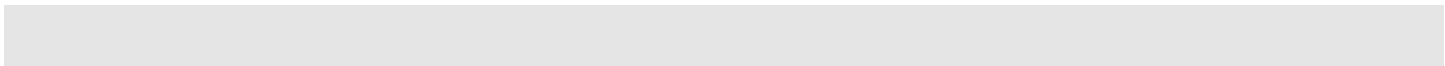
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Cellulose Fiber Filtration Media

Technical Bulletin #05017



*Use FIBER CLEAR a Cellulose Fiber
Filtration Media..... You'll
breathe a lot easier!!!!*



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S.W.I.M. Technical Bulletin

#05017

Fiber Clear

BACKGROUND

Since the introduction of cellulose fiber filtration media to the swimming pool industry in 1992, **S.W.I.M.** has been involved in the field testing and application of this much needed alternative to diatomaceous earth. This need has arisen from D.E.'s suspected carcinogenic effects and its known causation of Silicosis lung disease, as well as its undesirable effects on our environment and sewage systems.

S.W.I.M. was responsible for the introduction of this material for swimming pool and spa filtration in the Western United States in 1992 and has been conducting on-going field tests ever since. **S.W.I.M.** has been involved extensively in the testing and marketing of both known brands of cellulose fiber being sold as primary media for swimming pool and spa filters. Our experience with cellulose media involves application in all types of swimming pool and spa filters; vacuum and pressure grid (D.E.-type), cartridge and sand in both commercial and residential service, indoors and outdoors and in most imaginable water conditions. Our knowledge has grown with the assistance of professional pool and spa service people, site managers and homeowners. Our experience has not been from laboratory testing but from in-field, in-use testing over a 2-year period.

FINER FILTRATION

Our experience has shown pool and spa water filtered through **FIBER CLEAR** results in visibly clearer, brighter and more sparkling water. This is because the material filters much finer than pool grade D.E. The material filters elements out of the water which, heretofore, have not been filterable with D.E., such as algae spores and suspended metals (calcium, copper, iron, manganese, etc.). The result is a "polished" effect to the water beyond what can be realized with D.E. media. "Mini-micron" filtration, however, will exhibit some idiosyncrasies which can easily be dealt with once they are recognized.

PRELIMINARY SHORT CYCLING

Since **FIBER CLEAR** filters smaller micron material from water than was possible before the use of cellulose, the filter will initially "load" faster causing the filter pressure to rise more

quickly than usual for the first few cycles. This is due to the **FIBER CLEAR** media filtering elements from the water that have not been filterable with D.E. The filter should be back-washed when the filter pressure gauge reaches the level which would normally indicate that the filter needs back-washing. After two or three backwash cycles the length of cycle should increase to normal and, in most cases, will actually be longer than those experienced with the D.E. media. This will result in clearer, more ‘sparkling’ pool water because particles which were not being filtered with D.E. are no longer present in the water.

ALGAE: The “mini-micron” filtration characteristics of cellulose fiber can trap algae spores in the filter bed. In the case of non-chlorophyllus algae (such as mustard algae), an “algae bloom” can actually occur inside the filter can. If the filter were to be opened at this point, there would be a yellow-colored, “slimy” look to the filter bed. This will cause a rapid, sometimes as quickly as overnight, increase in the pressure in the system and will prevent thorough backwashing. This is likely to happen in the heat of summer when algae spores are most prevalent. When this occurs, merely add liquid chlorine directly through the skimmer to affect an “algae kill” in the filter can. A dramatic, rapid pressure drop should result immediately after the chlorine is introduced into the skimmer. At that point the filter should be back-washed and re-charged with **FIBER CLEAR**.

As a preventative, if liquid chlorine is the sanitizer of choice, add it directly through the skimmer when you normally service the pool rather than in the pool. If liquid chlorine is not the primary sanitizer, shock with it through the skimmer occasionally during the algae season.

NOTE: always be certain to have the filter pump running and to remove sanitizing tablet or sticks from the skimmer or in-line feeder before adding chemicals through the skimmer!!

The advantage of being able to kill the algae before they become visible in the pool is the reduction or elimination of expensive algaecides and aggressive pool wall brushing.

CALCIUM SATURATION: Another condition which can cause rapid increase in system pressure and incomplete backwashing is calcium saturation or near-saturation (ie: Calcium or Total Hardness of 600ppm or greater). This can cause a “shell” of calcium to form over the grid cake much like an eggshell. This phenomenon also occurs in filters using D.E., however, the calcium will actually bond to the D.E. filter bed and harden to the point that it cannot be backwashed. A filter “split” and acid washing the grids is typically required to correct the problem. With cellulose fiber as the media, calcium will typically not bond with the filter bed (calcium will not bond with paper), nor bond the media to the grids.

The addition of a 20% Muriatic Acid solution poured directly into the skimmer while the filter pump is running will dissolve the calcium and cause a rapid decrease in pressure in the filter. The filter can then be backwashed normally. Maintaining 20ppm of Phosphonic Acid residual in the pool will also help to keep high levels of calcium in solution. Phosphonic acid is the most common ingredient in sequestering agents.

Watch for this phenomenon to occur most frequently in hard-water areas or in pools utilizing Calcium Hypochlorite as a primary sanitizer. The best way to determine the level of calcium in pool and spa water is with a good test kit. However, a simple method to determine if severely elevated calcium levels exist is to pour a small amount of liquid chlorine into the pool water. If a milky cloud results where the chlorine was added, it indicates excessive levels of

calcium in the water. The solution is to drain all or a portion of the pool water to dilute calcium levels to well below the saturation point, ideally to between 200-400ppm.

OIL CONTAMINATION: When servicing heavily used, commercial pools and spas, if a rapid pressure increase in the system is experienced and neither liquid chlorine nor a 20% acid solution cause the pressure to drop back dramatically, there may be a high concentration of body and suntan oils in the water. Oils may cause the **FIBER CLEAR** media to “load-up” quickly and to short cycle. If the filter were to be opened at this point, the filter bed would appear to be a shiny gray or black color. Neither the addition of chlorine nor acid will reduce oils. This phenomenon links directly to “high-use” periods in commercial indoor and outdoor pools and spas (ie: health clubs, resorts, hotel-motel, etc.) where body oils and suntan oils are excessive. As a general rule, this is not a problem in residential pool and spas due to lower swimmer loads.

Because D.E. is heavy and tends to sink to the bottom of the grids, much of the light-weight oils entering the filter can escape back to the pool through the uncoated or lightly-coated areas at the top portion of the grids. This contributes to the scum line around the tile of a pool or spa. **FIBER CLEAR** creates a very uniform “cake” over the entire filter grid surface and it actually absorbs oils. It will capture the oils and collect it in the filter media (as it should). More frequent backwashing may be necessary as the media loads up from oil saturation. Cycles may get longer, the scum line reduced and backwashing less frequent as more of the “old” oils are removed. If oils are a persistent problem, however, the pool or spa should be treated with oil-ingesting enzymes, such as “De-Skum” or “Natural Chemistry” and/or oil-absorbent material, such as “Spa Block”. This combination of oil-absorbing products may lengthen filter cycles during high loading periods without increasing the size of the filters.

FLOCCULANTS: Synthetic polymer flocculation agents (usually identified by their blue color or the title, “Clarifier”) were originally produced to aid cartridge and sand filters. They aid in the filtration effectiveness of those filters by prematurely “loading” the media to effect smaller micron filtration. They are not recommended for filters using either D.E. or cellulose fiber, where they will quickly reduce water flow below acceptable minimums. Natural polymeric flocculants such as “Sea-Klear” may be used safely with D.E. and **FIBER CLEAR** media.

POOR FILTRATION AND HYDRAULIC ENGINEERING: The vast majority of systems which are not performing as desired are a result of too little filter surface area for the amount of bather load or too much or too little water flow through the system. The only complete cure for these problems is to replace or modify the inadequate equipment as time and money allows.

SUMMARY - SHORT CYCLING

In summary, always remember that if short cycling is occurring, it can only be because the filter media is collecting undesirable elements and impurities from the water and holding them in the filter bed (or the filter is sized improperly for the application, in which case the filter will perform unsatisfactorily, regardless of the filter media used).

In other words, *the filter media is doing exactly what it is supposed to do!*

In the case of **FIBER CLEAR**, “mini-micron” filtration is being employed to remove minute particles which pass through traditional filtration media. If short cycling is occurring, you should first check and correct the water for algae, calcium hardness, tds and/or oil loading, as described above.

NOTE: The most cost-effective way to correct high hardness or calcium levels in pool water is not with chemicals! Even in areas of expensive water it should cost less then \$60.00 for 20,000 gallons! For old, tired, calcium and TDS saturated pool water Dilution is usually the cost-effective Solution!!

GENERAL INFORMATION

Our experience with cellulose fiber as primary filtration media for swimming pool and spa water has shown that it is simply the best media available for the application. It is made from virgin wood pulp supplied by major paper or wood product companies through a process which produces cellulose fibers from roll stock. It is an FDA approved material and has been used in the food processing and pharmaceutical industries for human ingestion for many years, attesting to its non-toxicity and environmental friendliness.

The bottom line, however, is the efficacy of the product for the application. We know that cellulose fiber is a superior filtration media for swimming pool and spa water and that **FIBER CLEAR** is the very best product available for the application.

EXPERIENCE SUMMARY

S.W.I.M., the marketers of **FIBER CLEAR**, has been serving the swimming pool and spa industry for over 15 years. Our professional staff prides itself on bringing new, innovative, effective and “tried-and-true” products and methods to our growing industry. Our background in the swimming pool and spa industry and our hands-on, in-field experience with **FIBER CLEAR** and our other fine products puts us “miles ahead” of competition when it comes to those all-important, vital factors called “customer service” and “product knowledge”. You can be assured that when you use **FIBER CLEAR** you are using the very finest product available and that you are backed up by a company that knows your industry and your needs.

That’s why you should use only **FIBER CLEAR**.....you’ll breathe a lot easier

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