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**RESTRICTED**



UNDER 17 REQUIRES ACCOMPANYING  
PARENT OR ADULT GUARDIAN

**This presentation will probably contain adult situations, strong language and brief frontal nudity**

**All stunts are preformed by professionals and it is strongly suggested you do not try this at home**





AALSO

Aquatic Animal Life Support Operators

# Filtration Basics



MIAMI FILTER  
INTERNATIONAL



**The Life Support System providing clean water to your aquatic environments is co-dependent on a series of other functions besides the filtration process.**

**These other functions include circulation, chemical treatment, sanitation, personal hygiene, operating personnel and safety.**

**Your sand filter is very basic in its operation, and as a rule , user friendly and dependable. If all other functions perform as designed, the filter system should provide clean, clear water for your LSS.**

**Comprehensive knowledge and understanding of the design functions of your specific system is crucial to proper operation of your system.**

- What is the LSS capacity in gallons?**
- What are the required filter and backwash rates in gallons per minute per square foot (GPM/sq. ft.)?**
- Does your system include the necessary indicators such as gauges, sight glass, flow-meters and control valves?**



## **INSPECTING THE FILTER MEDIA**

- 1. Is the filter bed top elevation consistent with manufacturers recommendation?**
- 2. Are there any uneven mounding of media on the bed surface?**
- 3. Is there noticeable spacing (channeling) between the filter bed and outer wall of the filter tank?**
- 4. Are there any other voids in the filter bed indicating “channeling”?**
- 5. Is the bed surface clear of foreign materials? If not, does the captured material form a sheet like barrier? Can you peel it off the bed?**
- 6. If the surface area is clear, can you penetrate easily through the Surface, or is the surface crusted over?**
- 7. Can you compress the media by grabbing a handful and making a baseball sized ball out of the material?**
- 8. If you explore down 9 to 12 inches, do you feel compacted or clumped media?**
- 9. Carefully inspect the media to see if the support gravel is mixed in with the filter media.**



## FILTER MEDIA

There is a wide range of filter media, sand types and grades available to perform specific filtration efficiencies. For optimum high rate efficiency, we recommend the use of .45-.55mm silica sand. If silica sand is not available in your area, others may be substituted. It is important however, that the sand size measure as close to the .45-.55mm particle size as possible. We have illustrated in the following the effects of new and backwashed sand on filtration performance.

### NEW SAND

New, unbackwashed filter sand contains fine grain sizes below the 0.45mm grain size. These fines intermix within the sand and provide super fine filtration qualities, but are detrimental to high rate filtration performance as the filter system will demand frequent backwashing. These must be removed by thoroughly backwashing your filter system in the initial start up.

### FILTERING THROUGH NEW SAND

If new sand is not backwashed during the initial start up, particles and oils are trapped on the surface and agglomerate the fine grains into a sandy crust or mat. A rapid increase in differential pressure will demand that the filter backwash at frequent intervals. Backwashing breaks up the compressed mat into chunks and begins the formation of "mud balls" which can only be removed by hand, or they will grow in size and impair filtration performance.



### TOO FINE

There are uniform grades of sand that at first glance appear close enough to the specifications of a true grade .45-.55mm sand. If it is fine grade, you can expect filter performance problems, i.e. frequent backwashing, the formation of mud balls, finer sands passing through, etc.

### TOO COARSE

If the sand is coarse grades, greater than .55mm, you can expect the filter to retain large particles and rocks, but, it will allow the finer particles to pass through. You can expect long durations between backwashing, but the source water will be poor clarity and of unacceptable quality.

### What's New

A n assortment of new and improved media is available for LSS applications ranging from crushed glass to crab shell media.

Miami Filter's current favorite is a sub-angular silica product called "Majestic White". This new product is manufactured specifically for sand filtration, producing finished product down to 5 microns with superior particulate holding capacity resulting in longer run times between backwash procedures. For additional info visit Mifi Booth.

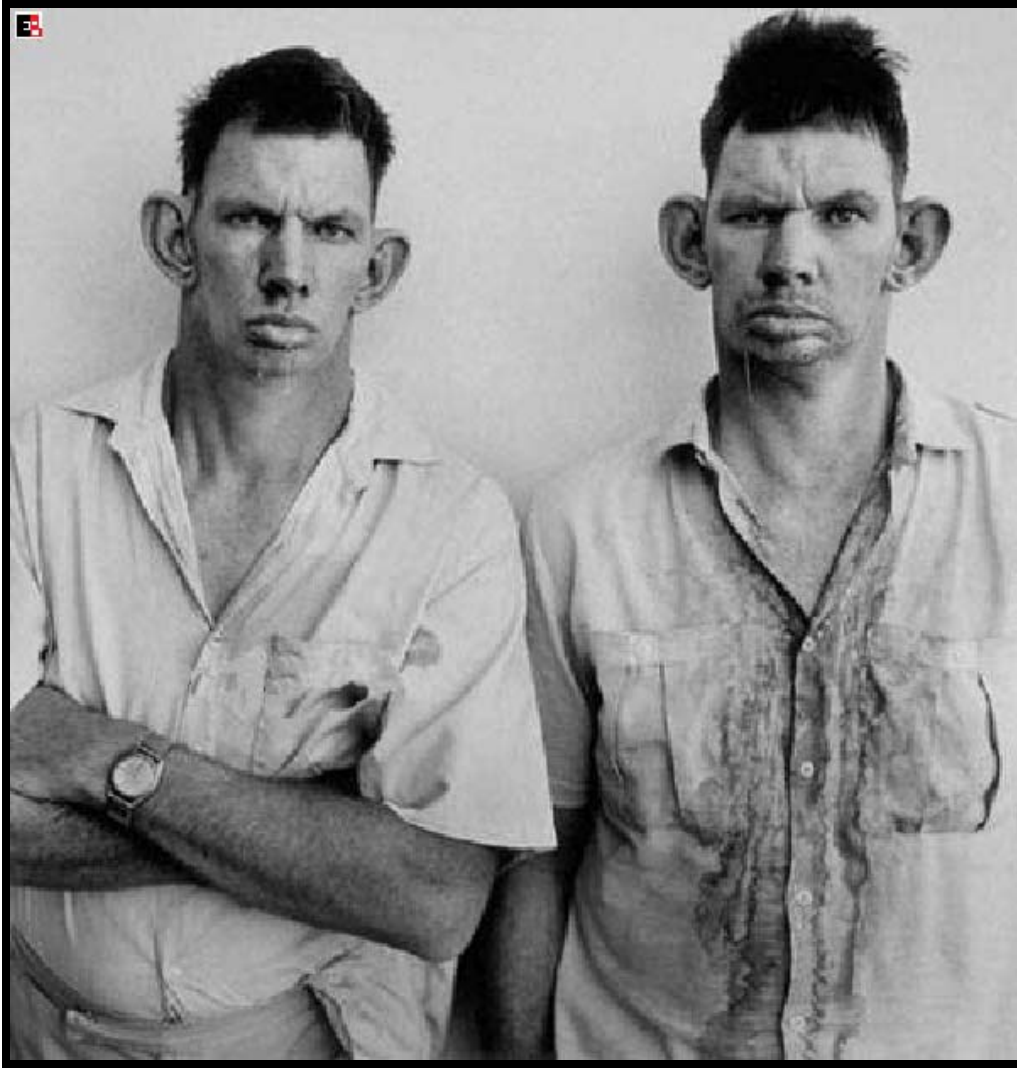
Standard System







# Operator Inquiries



**Rocco and Chooch Friggoli of Friggoli's Gator Farm, Bakery and Adult Novelty Emporium, in Podunk Louisiana, wrote:**

**Chooch and I have been facing challenging times and don't want our critters to be affected by the financial deficits, can AALSO help us maximize our existing system?**