

# TEST SUMMARY

## Effects of Fine Uniform Sands On Septic Drain Field Products



**INFILTRATOR®**  
systems inc.

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**An Infiltrator® Systems Inc. (ISI) laboratory study determines that Quick4® chambers out-perform traditional aggregate systems while preventing fine uniform sands from entering essential void spaces.**

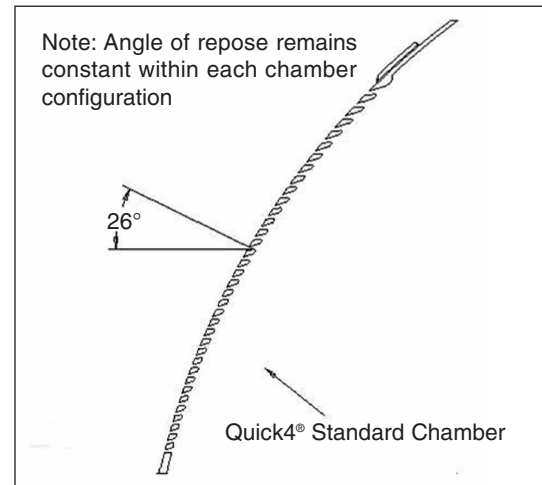
The Quick4 chambers' modified sidewall was designed to out-perform traditional aggregate systems by reducing the potential of intrusion of fine uniform sands. Low cohesion and internal friction properties may cause fine uniform sands to intrude into void spaces of drain field products. The Quick4 chambers' sidewall openings (*Figure 1*) allow soil to rest at a more stable angle of repose within the sidewall louver openings.

The goal of the winter 2004/2005 study was to determine if fine uniform sands could adversely affect the performance and potential life expectancy of the tested drain field products by reducing volume storage and infiltrative surface area. It is important to note that this test procedure emphasizes extreme conditions of quick filling and draining of the drain field product.

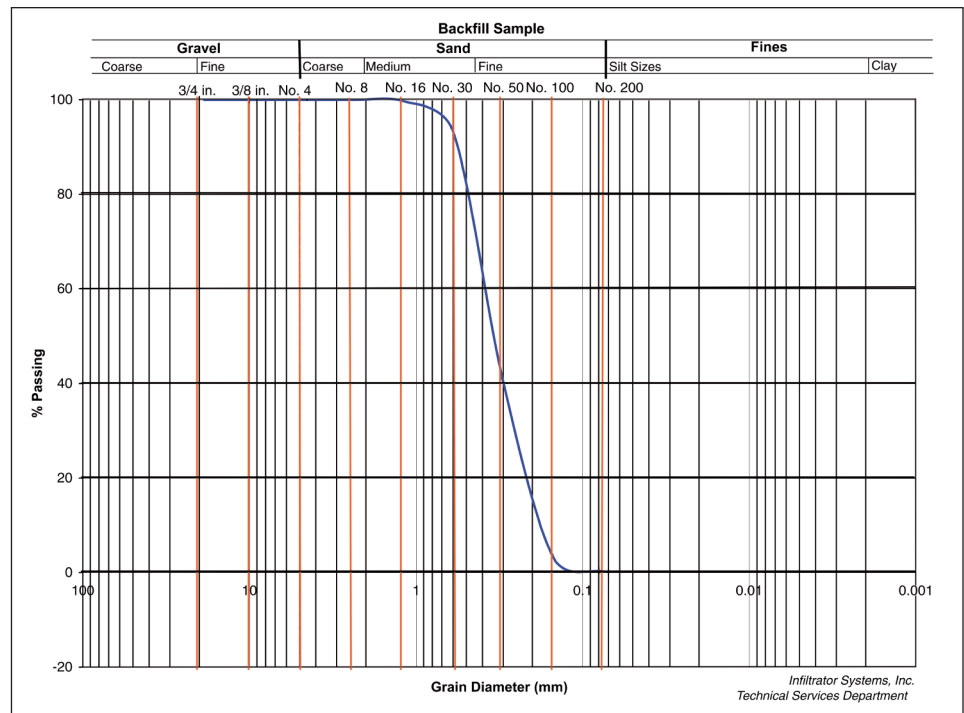
The Quick4 Standard chamber and traditional aggregate system were tested individually in a Plexiglas® test box manufactured by ISI's R&D Department. The test box is 24" long by 18" wide by 20" tall and represents one-half of a 3-foot wide trench. A rigid plastic divider was used to separate the fine uniform sand backfill material from the traditional aggregate system. This was done to prevent immediate infiltration of the backfill into the test sample before the test began. No divider was used when testing the ISI chamber products.

The backfill material used for testing was a dry, fine, uniform sand. A gradation report is shown in *Figure 2*. The sand was poured into the test box to the prescribed height. No compaction took place after the placement of the sand backfill. When installing chambers in the field, it is important to "walk in" and stabilize the loose backfill material around the chamber sidewalls in accordance with Infiltrator's installation instructions.

After each configuration was tested, the samples were completely flooded with clean tap water to represent the flow of effluent into the system. The introduction of water to the sample was done through a small valve that was built into the test box. Once each configuration was entirely flooded, the fill hose was removed from the valve and the configuration completely drained.



*Figure 1: Chamber sidewall*



*Figure 2: Gradation report*



Figure 3: Aggregate test box with rigid plastic divider in place



Figure 4: Aggregate test box with rigid plastic divider removed



Figure 5: Close up of sand infiltration after introduction of water



Figure 6: Quick4 Standard chamber during the introduction of water

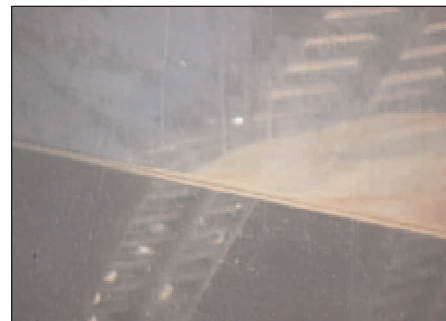


Figure 7: The Engineered louvers of the Quick4 Standard prevent soil intrusion while system is flooded



Figure 8: Engineered louvers preventing soil intrusion even after the system has been drained

## Conclusion

As shown in *Figures 3-8*, infiltration of fine uniform sands varies dramatically from aggregate to chamber. By comparison, ISI chambers out-perform traditional aggregate systems by preventing fine uniform sands from entering essential void spaces. The reason for the increased protection from soil intrusion is the design of the engineered sidewalls of the chambers. By designing the louvers around the “worst case scenario” for septic soils (fine uniform sands), minimal soil intrusion translates into a greater factor of safety, improved performance and increased life expectancy of Infiltrator chamber products.



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