

# EnviroFlex Well Screen

US Patent # 6,390,192 B2

Controls Fine Sand and Silts in Horizontal Wells



**EnviroFlex** well screens, distributed by [PQ Products, Inc.](#), help eliminate the problems of sedimentation while easing installation in horizontal wells or drainage systems. **EnviroFlex** was designed by environmental and engineering practitioners, specifically for horizontal well applications. It can be safely and economically pulled into place by the horizontal directional drilling contractor, creating a well that functions as designed, for the extraction or injection of liquids or vapors.

## Application

**EnviroFlex** well screen is suitable for environmental and engineering applications above and below the water table. It can be used for:

**Air sparging**

**Groundwater extraction**

**Mine dewatering**

**Soil vapor extraction**

**Bioremediation**

**Slope dewatering**

**EnviroFlex** works well in applications where the operations are cycled on and off, or the water table fluctuates. Sediment infilling of conventional well screens under these conditions often requires costly redevelopment of wells. **EnviroFlex** prevents sedimentation within the screen, maintaining well performance even under demanding conditions. This makes **Enviroflex** an excellent choice for groundwater extraction wells.

Since **EnviroFlex** requires no carrier casing to install, it is economical to use in single-ended or "blind hole" applications, such as for slope dewatering. This makes slope dewatering a realistic option for homeowners threatened by slope failures, often avoiding the need for expensive retaining walls or other engineered solutions.

## Design

The original **EnviroFlex** incorporated a geotextile filter media inside a perforated or slotted outer tubing. The geotextile filtration media was supported inside the tubing by a heat bonded HDPE geogrid. The geogrid holds the geotextile filtration medium in place, maintaining the interior space for the insertion of development tools, pumps and piping, air sparge lines, or instrumentation.

Since wells may experience significant collapsing pressure to the filtration media during installation, development or operation, **EnviroFlex** is now strengthened by adding an inner perforated or slotted pipe liner. Flow channels through the geogrid filter reinforcement direct the flow after it passes the filtration media to the slotted or perforated inner liner.

**EnviroFlex** can be designed for your specific project. The casing type, strength, open area, flow rates, and flow patterns can be adjusted by varying the pipe diameter, pipe wall thickness, perforation or slot size, and perforation distribution in the and inner structural casing. **EnviroFlex** is available in standard pipe sizes.

## Materials

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**EnviroFlex** is available in a variety of materials. The geotextile used is a nonwoven polypropylene, resistant to most chemicals including petrochemicals, solvents, pesticides and other common environmental contaminants. The geogrid is chemical-resistant HDPE for long-term performance. The outer and inner perforated structural casing may be specified in HDPE, PVC, fiberglass reinforced epoxy or metallic pipe.

### EnviroFlex Geotextile Properties

[Standard EnviroFlex uses 8 oz/sy Geotextile for Filtration Control Media]

| Property     | Unit       | ASTM Test Method | GE 180 Min Ave Roll Value |
|--------------|------------|------------------|---------------------------|
| Weight       | Oz         | D5261            | 8                         |
| Grab Tensile | lbs.       | D4632            | 225                       |
| Permittivity | 1/sec      | D-4491           | 1.26                      |
| Permeability | Cm/sec     | D-4491           | 0.3                       |
| Water Flow   | Gpm/sf     | D-4491           | 100                       |
| AOS          | U.S. Sieve | D4751            | 80 Max                    |

## Installation

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The strength and flush exterior of **EnviroFlex** permits fast and easy installation. There is generally no need to use temporary carrier casings as required with less robust well screens. **EnviroFlex** may be used with centralizers, pneumatic packers, and standard well installation and development tooling, with no special considerations.

**EnviroFlex** screen sections can be joined in a variety of ways, depending on the type of material, drilling operation, and site layout. For HDPE, the typical method is butt fusion welding. For steel or stainless steel wells, the ends may be threaded or welded. For PVC wells, the ends may be threaded, fused, glued or spline-locked. For fiberglass epoxy well screens the ends are generally threaded. The material choice depends upon strength needed, site conditions and contractor preference.

For best results, install **EnviroFlex** in wells that have been drilled using degradable polymer drilling fluids. After installation, the viscosity of these fluids is broken down through the addition of enzymes or other chemicals during well development. This greatly enhances the ability to properly develop the well for full performance. During development, the properties of the geotextile fabric used in **EnviroFlex** facilitate the removal of fines.

Bentonite-based drilling mud is not recommended for use with **EnviroFlex** well screens.

## For More Information

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**EnviroFlex** Product Manager, Paul Querna, PE

PQ Products, Inc.

923 E Farwell Road

Spokane, WA 99208-9577

Ph: 509-624-6820

Toll-free: 800-624-6820

Fax: 509-467-4515

<http://www.PQProducts.com>

E-mail: [EnviroFlex@PQProducts.com](mailto:EnviroFlex@PQProducts.com)