

Innovative, imaginative solutions for protecting our most precious resource, water

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Properties

- Heavy Duty
- High Flow Channels
- Consistent Shape
- Reduced Labor
- Reduces the threat of mold and mildew
- Easily installed to conform to any

Product Information


Flowtech™ Drainage Systems replaces the need for gravel in all drainage applications.

Technically engineered gravel

| | | |
|-----------------------------|--|------------------|
| Long life over 100 years |  | Does not compact |
| High flow channels | | Engineered shape |

No messy gravel clean-up

Why break your back moving tons of gravel.

| | | |
|---|--------------------------|---------------------------------|
|  | Gravel contains fines | Compacts easily reduces flow |
|---|--------------------------|---------------------------------|

configuration

- Redistributes the excess/surface water and returns it to the Aquifer
- Each 10' unit has the capacity to hold up to 30 gallons of water and quickly/efficiently distributes back into the soil.

Different shapes

channels

- Use Flowtech™ not your back. Flowtech™, the most advanced drainage system on the market.

1-12" Diameter X 10' section replaces over 1000 lbs of gravel

Installed in minutes with one man

1.8 times more efficient than gravel



Holds up to 30 gallons of water

[See test results](#)

High density PE pipe

Easily coupled together

Flowtech™ is a division of ICC Technologies Inc.

Applications



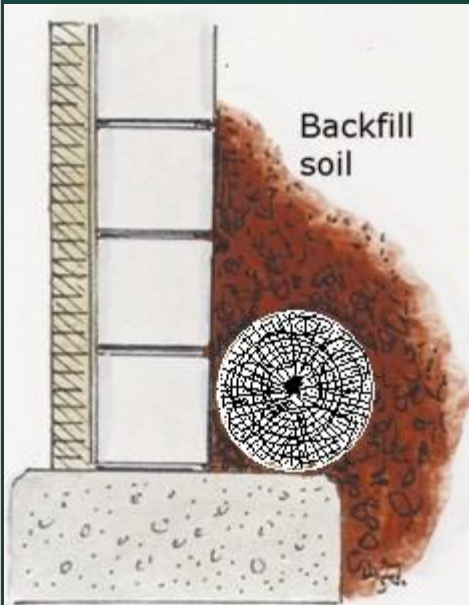
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- Flowtech™ drainage systems are perfect for golf courses
- removes standing water from traps, greens and fairways

- Reduced labor
- Reduced time
- reduces excessive drainage to surrounding areas due to heavy equipment for gravel

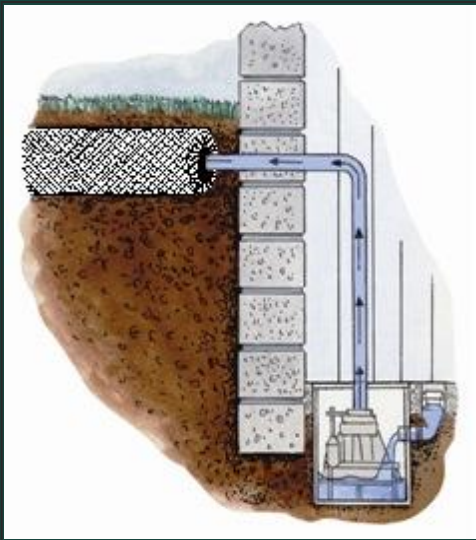
▶ Retaining Wall Drain



Flowtech™ Drainage System
no pipe



Sump Pump Drain
with Flowtech™ Drainage System



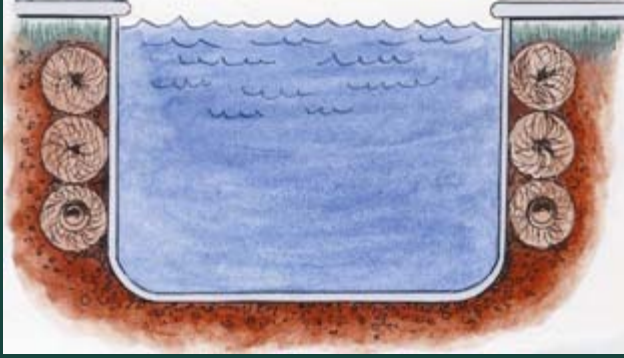
Quickly moves water away from foundation reducing moisture and mildew from basement

▶ SWIMMING POOLS

Eliminates gravel

Reduces labor

Removes surface water from under concrete coupling and cement edging



Reduces static pressure against sidewall of pool

▶ STORM WATER DRAIN



Contains fines
Compacts easily
Reduces flow channels

No gravel
Easy clean-up
Conforms easily



French drains



Darcy's Law
Blue Diamond Pipe Specifications
Flowtech™ Drainage Systems
Study from StyroChem and Resirene

Darcy's Law

1. A law describing the rate of flow of water through porous media. (Named for Henry Darcy of Dijon, who formulated it in 1856 from extensive work on the flow of water through sand filter beds.) As formulated by Darcy the law is:

$$Q = k \cdot S \cdot (H+e) / e$$

where

Q is the volume of water passed in unit time,

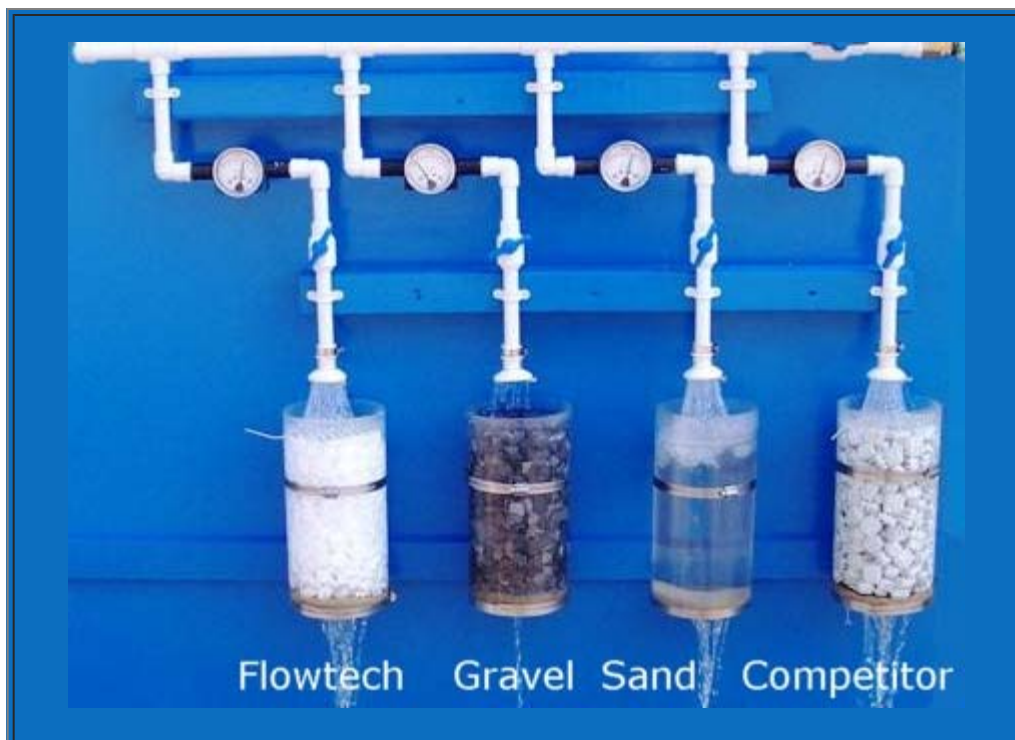
S is the area of the bed,

e is the thickness of the bed,

H is the height of the water on top of the bed, and

"k is a coefficient depending on the nature of the sand" and for cases where the pressure "under the filter is equal to the weight of the atmosphere."

2. Generalization for three dimensions: The rate of viscous flow of water in isotropic porous media is proportional to, and in the direction of, the hydraulic gradient.
3. Generalization for other fluids: The rate of viscous flow of homogeneous fluids through isotropic porous media is proportional to, and in the direction of, the driving force.



Blue Diamond Corrugated Polyethylene Pipe Specifications

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| MATERIAL | DIAMETER | ELONGATION | PIPE STIFFNESS |
|----------------|----------|------------|----------------|
| 4" SINGLE WALL | 4.0" | 10% | 24 PII @ 5% |
| 6" SINGLE WALL | 6.0" | 10% | 24 PII @ 5% |

Specifications

ASTM F405: STANDARD SPECIFICATION FOR CORRUGATED POLYETHYLENE PIPE AND FITTINGS

LEACHED BED PIPE PERFORATIONS: 2 ROWS ¼" to ¾" DIAMETER HOLES AT MAXIMUM 5" CENTERS

ASTM D1248 (GRADE **PE 33**, CLASS C): STANDARD SPECIFICATIONS FOR PE PLASTIC COMPOUNDS HAVING HIGHER CELL CLASSIFICATIONS ARE ACCEPTABLE PROVIDING PRODUCT REQUIREMENTS ARE MET

Typical Properties

| <u>Property</u> | <u>Test Procedures</u> | <u>Units</u> |
|---------------------------|------------------------|----------------------|
| Density (3) | ASTM D1505 | 0.941 - 0.955 gm/cc |
| Melt Index (2) | ASTM D1238 | 1.0 to 0.4gm/10min |
| Flexural Modulus (4) | ASTM D790 | 80,000 - 110,000 psi |
| Tensile Strength Yield(4) | ASTM D638 | 3000 - 3500 psi |
| UV Stabilizer (C or E) | ASTM D1603 | >2% |
| Ultimate Elongation | ASTM D638 | >400% |

| | Gravel System w/4" pipe | Flowtech™ System w/4" pipe |
|---|----------------------------|-------------------------------|
| clean/dust free | | v |
| light weight | | v |
| easy to install | | v |
| 1.6 times effective than gravel | | v |
| versatile | v | v |
| faster installation | | v |
| less installation damage to existing lawn | | v |
| no large equipment needed | | v |
| reduce labor | | v |
| no compaction | | v |
| consistent shape | | v |
| engineered flow channels | | v |
| dramatically increase flow rate | | v |
| gravel clean-up and removal | v | |
| | | |



Resirene

General Durability and Resistance to Degradation

Polystyrene is a very inert, chemical resistant and biologically resistant material. It is inert to chemical reactions and absorption of essentially all aqueous media. Its only degrading environments are essentially oils and solvents. Undisturbed polystyrene foams exposed to biologically rich soils for many decades exhibit negligible degradation.

Shelf Life

The useful lifetime of polystyrene foam is essentially unlimited, at least many decades, in absence of long-term exposure to sunlight, oils and solvents.

Termites, Ants and Rodents

Polystyrene cannot be digested or metabolized by animals, insects or microorganisms. Hence it is not a source of food and is not consumed by pests. Such pests could presumably burrow through polystyrene foam if there is an incentive such as another food source or shelter to be reached.

Chemical Absorption

The polystyrene foam used for dunnage, insulation and load bearing applications is essentially a closed cell structure. Therefore liquids are unable to permeate and saturate the foam through open channels, as with water in a sponge.

The polystyrene itself which makes up the foam structure is highly inert to the absorption of aqueous, including acid and bases, and to contaminants that are readily soluble in water, uncontaminated by organics, salts and trace metals.

Polystyrene can absorb significant amounts of oils, fats and solvents, and may be significantly degraded in such environments.

Temperature Stability

The use temperature range of polystyrene foam widely exceeds the range of ambient temperatures in all climates. The upper limit for retention of good mechanical properties is about 170°F for prolonged exposure.

There is no significant loss of strength at very low temperatures as with rubbery materials. Therefore polystyrene foam remains a good load bearing and insulating material at far sub-zero temperatures. It is used as an insulating material for cold storage installations at temperatures of about -40°F.

Life Span

Expanded polystyrene is a highly stable compound. The expected life span is indefinite. The product will last for well over 100 years

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June 5, 2006

Mr. Harry Bussey
I.C.C. Technologies
240 Boundary Road
Marlboro, NJ 07746

Dear Mr. Bussey

In answer to your questions concerning the performance of expandable polystyrene:

Termites

- There is no nutritional value in polystyrene and thus it is not attractive to termites, ants, or rodents. Insects will not eat polystyrene, as it is not a food source.
- While termites may burrow through solid polystyrene, for termites it is the same as soil, something in their way, which they will either move or crawl over.

Chemical Absorption

- Polystyrene is an inert, large molecular weight compound that does not breakdown in aqueous solutions.
- Polystyrene does not act as an absorbent like activated carbon, nor is polystyrene very permeable to liquids.

Chemical Degradation

- The chemical resistance of polystyrene is well known. It is not attacked or degraded by long exposures to either bleach, soap solutions, or common household products that are poured down the drain.

- Polystyrene is virtually resistant to all aqueous media including dilute acids and bases.

Temperature Stability

- Polystyrene has the ability to tolerate extreme temperature ranges. It has a continuous use temperature range of -108 degrees F + 175 degrees F.
- Polystyrene is not brittle at subzero temperature. Over time polystyrene may soften in boiling water (212 degrees F).
- Products made of polystyrene will not be affected by the harshest of temperature climates or changes.

Life Span

- Expanded polystyrene is a highly stabile compound. The expected life span is indefinite. The product will last for well over 100 years.

Sincerely,



Mike Pate
VP/General Manager
StyroChem US & Canada