

ULTRA-URBAN® FILTER WITH SMART SPONGE® & SMART SPONGE® PLUS

ULTRA-URBAN® FILTER DESCRIPTION

The Ultra-Urban® Filter with Smart Sponge®, developed and manufactured by AbTech Industries, is an innovative low-cost BMP that helps meet NPDES requirements with effective filtration, efficient application, and moderate maintenance. The Ultra-Urban Filter absorbs oil and grease and captures trash and sediment from Stormwater runoff before it enters the storm drain system. The Ultra-Urban Filter is ideal for municipal, industrial, and construction applications. The filter comes in two standard designs; one a modular unit geared toward curb inlet openings, and the other, a single unit designed for typical drop-in catch basin drains.

The Ultra-Urban Filter, made of a high strength corrugated recycled content plastic, is designed for use in storm drains that experience oil and grease pollution accompanied by sediment and debris. Trash and sediment accumulate in the upper basket chamber while oil and grease are absorbed in the filtration media.

PERFORMANCE

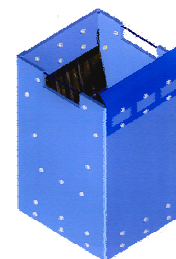
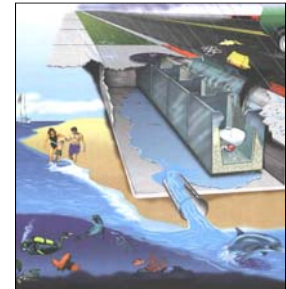
Field and laboratory tests have confirmed the capability of the Smart Sponge to absorb, depending on the type of oil contaminant, up to five times its own weight and remove 70% to 95% of the hydrocarbons present in Stormwater runoff, typically in the range of 5 to 30 mg/liter (ppm). The captured oil is permanently bound within the Smart Sponge, eliminating leaching and allowing for easy disposal of the filtration media. Flow rates through the CO1414 filters exceed 200 gpm. Flow rates through the fil-

INSTALLATION

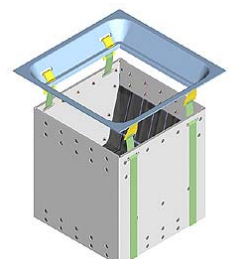
The Ultra-Urban Filter is easily installed. Installation time varies depending upon mounting devices selected. A single mounting bracket made of 16-gauge galvanized steel is required for the installation of the Curb Opening (CO) series. The Ultra-Urban Filter should not be installed where modules obstruct the drain pipe outlet. The size of the drain should allow room for stormwater overflow. The Drain Inlet (DI) series Ultra-Urban Filter will suspend from the drain into the catch basin through a structural plastic mount and funnel mechanism (see drawings).

MAINTENANCE

The Ultra-Urban Filter should be serviced as needed to remove sediment and debris, according to expected debris accumulation. The sediment and debris can be quickly vacuumed out of the modules through the opening of the drain with conventional maintenance equipment. For example, a curb inlet with four to five Ultra-Urban Filter modules can be typically serviced in 10 minutes or less. Under normal operating conditions the Ultra-Urban Filter should be replaced every 1-3 years.



CO1414 for
Curb Opening Drains
"Inlets"



DI2020 for
Drop-in Drains
"Catch Basins"

ADVANTAGES AND BENEFITS

- Removes oil, grease, trash, sediment & debris
- Modular design accommodates most storm drains
- Smart Sponge media removes up to 95% of oil and grease in Stormwater runoff
- The only true structural catch basin insert filter
- Lightweight and easy to handle
- Quick installation, easy to maintain, can be serviced from street level
- Cost effective BMP
- Filter housing made from Recycled Content Plastic
- Recyclable through WTE

SMART SPONGE® AND SMART SPONGE® PLUS DESCRIPTION

Over the past seven years, AbTech has developed the **Smart Sponge®** technology based on its proprietary blend of synthetic polymers aimed at removal of hydrocarbons and oil derivatives from surface water. AbTech's process creates a very porous structure (see Figure A) with hydrophobic and oleophilic characteristics capable of selectively removing hydrocarbons while allowing high flow through rates for water. As hydrocarbons are absorbed into its structure, the Smart Sponge® swells and maintains porosity and filtering capabilities.

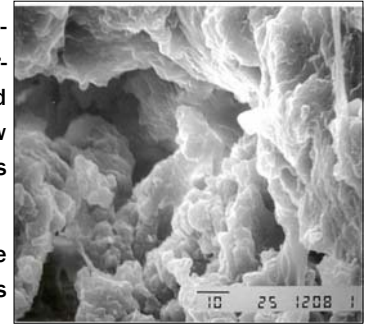


Figure A (1,000 X)

Field and laboratory tests have confirmed the Smart Sponge® capability to absorb, depending on the type of oil contaminant, up to five times its own weight and remove 75% to 95% of the hydrocarbons present in Stormwater runoff, typically in the range of 5 to 30 mg/liter (ppm). The absorption is permanent and the saturated product does not leach or leak contaminants, transforming the contaminant – in most cases – into a solid waste with lower disposal costs.

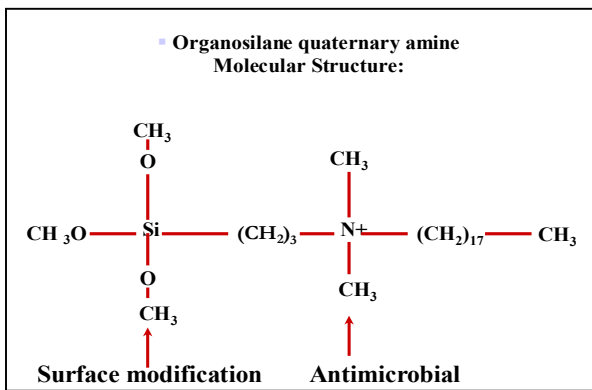


Figure B

During the past couple of years, AbTech has worked on the development of an antimicrobial technology. **Smart Sponge® Plus** features a proprietary antimicrobial agent (see Figure B) chemically and permanently bound to the Smart Sponge polymer surface and therefore does not leach or leak, avoiding any downstream toxicity issues.

The antimicrobial mechanism is based on the patented agent's interaction with the microorganism cell membrane, causing the microorganism disruption (see Figure C), but no chemical or physical change in the agent.

Antimicrobial activity does not reduce the agent capability or cause its depletion and, therefore, maintains long-term effectiveness. Additionally, the hydrocarbon absorption capability is not inhibited.

Microbial reduction efficiency will vary depending on colony size, flow rates and site specific conditions.

- Consistent positive reduction in microbial concentration realized in laboratory setting and field testing sites in the United States.
- Larger scaled field deployment and data generation projects are ongoing.

TARGETED MICROORGANISMS

- Enterococcus
- Coliforms
 - Fecal coliform
 - Escherichia Coli

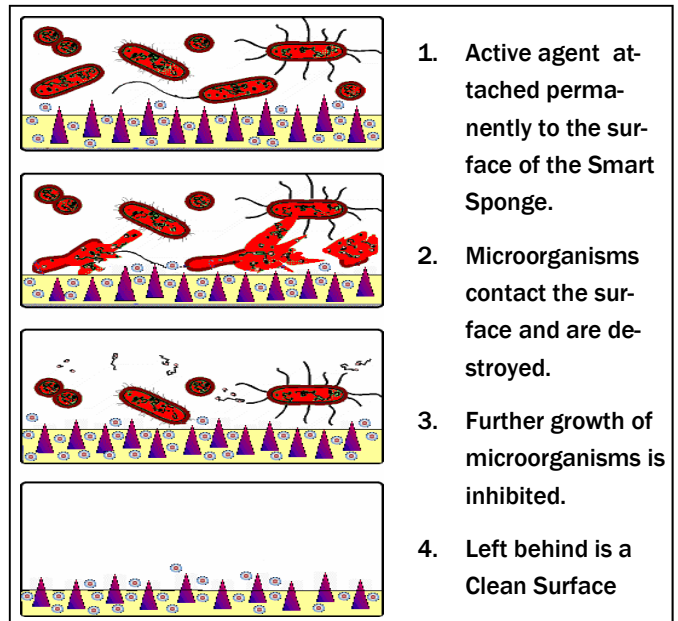
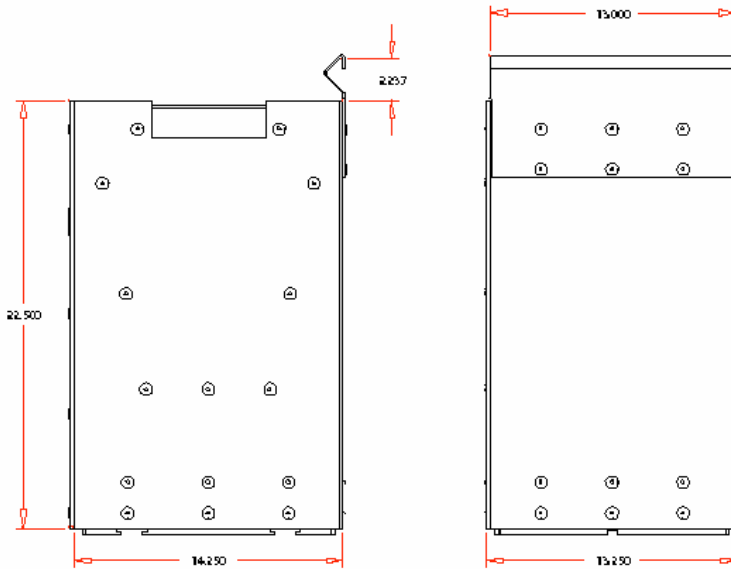


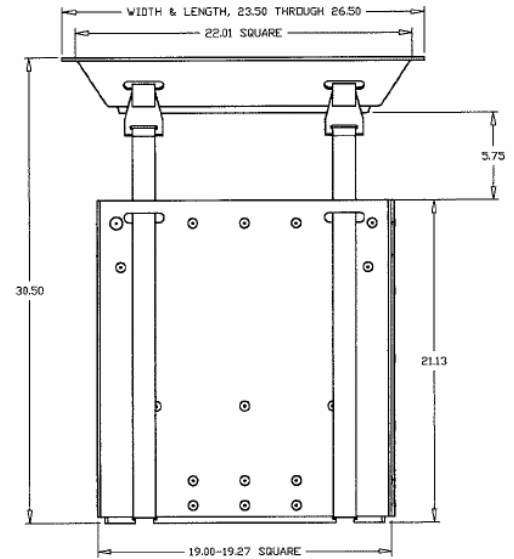
Figure C

ULTRA-URBAN® FILTER DRAWINGS

Complete product drawings for each model available from AbTech in CAD or PDF format.



C01414N Side & Front View



DI2020N

ULTRA-URBAN® FILTER KEY FEATURES

Part #	Description	Dimensions	Gross Weight (approx.)		Flow Rate Q (approx.)	Trash & Debris Capacity
			With Smart Sponge®	Trash & Debris Only		
Curb Opening Module:						
CO1414N	UUF, Normal size	13¼" x 14¼" x 22½"	20 lbs.	5.5 lbs.	200 gpm = 0.44 cfs	1.5 ft ³
CO1414H	UUF, Half size	13¼" x 14¼" x 13"	13 lbs.	4.5 lbs.	170 gpm = 0.39 cfs	0.8 ft ³
Drain Insert Module:						
DI1414N	UUF, Normal size	13¼" x 14¼" x 21 1/8"	20 lbs.	5.6 lbs.	200 gpm = 0.44 cfs	1.5 ft ³
DI1414H	UUF, Half size	13¼" x 14¼" x 13"	13 lbs.	4.5 lbs.	170 gpm = 0.39 cfs	0.8 ft ³
DI1420N	UUF, Normal size	14" x 19¼" x 21 1/8"	24 lbs.	6.5 lbs.	300 gpm = 0.70 cfs	2.1 ft ³
DI1420H	UUF, Half size	14" x 19¼" x 13 3/8"	18 lbs.	5.0 lbs.	300 gpm = 0.70 cfs	1.1 ft ³
DI1616N	UUF, Normal size	16" x 16" x 21 1/8"	24 lbs.	6.5 lbs.	240 gpm = 0.55 cfs	1.8 ft ³
DI1616H	UUF, Half size	16" x 16" x 13 3/8"	18 lbs.	5.0 lbs.	240 gpm = 0.55 cfs	1.0 ft ³
DI2020N	UUF, Normal size	19¼" x 19¼" x 21 1/8"	30 lbs.	7.5 lbs.	500 gpm = 1.11 cfs	3.0 ft ³
DI2020H	UUF, Half size	19¼" x 19¼" x 13 3/8"	22 lbs.	6.0 lbs.	500 gpm = 1.11 cfs	1.7 ft ³

Each of the above available with Smart Sponge®, Smart Sponge® Plus, or Trash & Debris

DISPOSAL OPTIONS

AbTech's **Smart Sponge®** technology transforms liquid hydrocarbons into a stable solid¹. The handling and disposal of this solid waste is less expensive and less problematic than that of other plastic and organic solvents which leach and leak hydrocarbons back into the environment. The following waste disposal and resource recovery industries will accept spent Smart Sponge for disposal and/or recycling.

- **Waste-to-Energy Facilities** - A specialized segment of the solid waste industry will use spent Smart Sponge as an alternative fuel in the production of electricity.

WTE is acknowledged at the federal level as a renewable energy source under the Federal Power Act, Title IV of the Clean Air Act.

WTE is a participant in the Department of Energy's National Renewable Energy Program.

- **Cement Kilns** - This industry will use the spent Smart Sponge as an alternative fuel in the production process of Portland Cement. This process is considered a beneficial reuse of waste products. The BTU value of spent Smart Sponge is consistently above the average acceptable levels set for this high temperature.
- **Landfills** - The ability of Smart Sponge to transform liquid hydrocarbons into a solid waste makes for less expensive and easy disposal. Spent Smart Sponge generated from the AbTech laboratories have been classified as a solid waste and are acceptable at Subtitle D Landfills².

¹Generators of spent Smart Sponge will need to have their waste analyzed, tested, and classified to determine the generator's particular waste. According to testing performed for AbTech Industries, spent Smart Sponge soaked with petroleum hydrocarbons are transformed into solid wastes. AbTech does not take any responsibility for the generator's waste classification for handling, transport and the ultimate disposal or recycling of the waste. The generator must always classify and characterize its own waste.

²Spent Smart Sponge generated from the AbTech laboratories with a multitude of liquid petroleum hydrocarbons have passed the EPA Toxicity Characteristic Leachate Procedures and Paint Filter Test. These tests are used in determining the amount of liquid waste and any free liquids present that may be released into the landfill environment.

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