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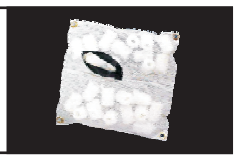

Ultra-Urban Filter

Case Study (Westchester County Airport)

Case Study (The City of Long Beach)

GREENAPPLE

Green Approach to combat hydrocarbon pollution

Smart Sponge®

AbTech's Smart Sponge® technology is at the heart of its product innovation. Its unique molecular structure is based on innovative polymer technologies that are chemically selective to hydrocarbons. Smart Sponge® fully encapsulates recovered oil, resulting in a substantially more eff ecti ve response that prevents absorbed oil from leaching. It is also capable of removing low levels of oil from water, thereby successfully removing sheen. In addition, the Smart Sponge® remains buoyant in calm or agitated water, permitting it to remain in place until fully saturated and resulting in no wasted product.

Once oil is absorbed, the Smart Sponge® transforms the pollutants into a stable solid for easy recycling, providing a closed-loop solution to water pollution. Smart Sponge® technology provides a cost-effective BMP with low installation and maintenance labor costs. In comparison to other products, the Smart Sponge® technology also allows for less expensive and less problematic handling and disposal of the waste product since its technology transforms liquid oil and other pollutants into a stable solid. The Smart Sponge® was designed not to deteriorate in water, allowing for a longer product life.

Smart Sponge For Hydrocarbons

- Chemically selective to hydrocarbons
- Removes up to 3 times its own weight in hydrocarbons
- Removes or reduces sheen
- Remains completely buoyant even after being
- saturated with hydrocarbons
- Does not require modification of existing structures
- Offers non-point source pollution prevention
- Transforms hydrocarbons into a stable solid per EPA's Toxicity Characteristic Leaching Procedure (TCLP)

Smart Sponge For Hydrocarbons And Bacteria

- Smart Sponge Plus reduces coliform bacteria found in stormwater, industrial wastewater and municipal wastewater
- Smart Sponge Plus can be engineered using controlled test parameters (such as modifying flow rates and coliform bacteria concentration) to meet your performance requirements
- Smart Sponge Plus is designed to assist water systems to meet Total Maximium Daily Load Limits (TMDLs) for coliform bacteri
- When properly installed and maintained Smart Sponge Plus provides a significant reduction in coliform bacteria

Smart Sponge® Plus - EPA Reg. #86256-1

AbTech has developed an antimicrobial technology synergistic with the Smart Sponge® technology. This effort produced Smart Sponge® Plus, which features an antimicrobial agent chemically and permanently bound in a proprietary process to the Smart Sponge polymer surface which reduces coliform bacteria. Due to this permanent bond, the antimicrobial agent is active but does not leach or leak, avoiding any downstream toxicity issues. Smart Sponge® Plus off ers engineered solutions for reducing coliform bacteria found in stormwater, industrial wastewater, and municipal wastewater.

The Agent used for this innovative technology is an Organosilane derivative which is widely used in a variety of fields including medical, consumables, pool equipment, and consumer goods to impart biostatic activity to the surface of a wide variety of substrates. This Smart Sponge® Plus mode of action, through its bound agent, is very simple (no chlorine or heavy metals involved) and - in surfacebound applications – it neither introduces chemicals into the treated water nor produces toxic metabolites. The antimicrobial mechanism is based on the agent's interaction with the microorganism cell membrane, causing microorganism inactivation, but no chemical or physical change in the agent. Antimicrobial activity therefore does not reduce the agent's capability or cause its depletion, and maintains long-term effectiveness. Additionally, the hydrocarbon absorption capability is not inhibited. The antimicrobial agent is registered with the EPA for a variety of applications. When properly installed and maintained Smart Sponge® Plus provides a significant reduction in coliform bacteria.

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Simple Implementation

Products incorporating Smart Sponge® technology are non-mechanical, do not require structural changes to stormwater systems and are easily installed and maintained, oft en requiring only one person and no equipment. Products such as the Ultra-Urban® Filter with Smart Sponge® Inside fit into most existing catch basins. The Smart Sponge® technology is deployed in products that offer customized solutions for stormwater pollution prevention, oil spill response, process water filtration and other industrial applications to meet specific environmental needs. AbTech Industries offers an extensive product line that is upgradeable to meet evolving community needs and regulatory requirements.

Field Installations

As part of the Long Beach Stormwater Filter Project, the City of Long Beach, CA installed 1900 Ultra Urban Filters in 2004. During a 3 year period an estimated 91,000 pounds of trash, debris, sediment, oil and grease, and organics were removed. The City of Norwalk, CT in cooperation with EPA is running one of the largest federally funded projects to date for catch basins. The project is successfully demonstrating the ability of the Smart Sponge® Plus Ultra-Urban® Filter deployed in catch basin inserts to remove trash, debris, sediment, oil and hydrocarbons.

Disposal Options

As local conditions, product use, and exposure can vary widely, the end user must determine the most appropriate disposal method for a spent Smart Sponge® product. However, Smart Sponge® samples saturated with hydrocarbons, both in the lab and in the field, have been tested according to the EPA's Toxicity Characteristic Leaching Procedure ("TCLP"). These tests show that Smart Sponge® is a "non-leaching" (i.e., non-detect or "N.D.") product. As a result, Smart Sponge® technology can afford many cost effective and environmentally friendly disposal options. The following waste disposal and resource recovery industries have accepted spent Smart Sponge® products for disposal and/or recycling.

Waste-to-Energy Facilities - A specialized segment of the solid waste industry has used 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 and is a participant in the Department of Energy's National Renewable Energy Program. Cement Kilns - This industry has used 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 - As discussed above, spent Smart Sponge® products have been classified as a solid waste and have been accepted at Subtitle D Landfills.

Benefits

- Chemically selective to hydrocarbons
- Capable of removing up to 3 times its own weight in hydrocarbons
- Removes or reduces sheen
- Capable of transforming hydrocarbons into a stable solid per EPA's Toxicity Characteristic Leaching Procedure (TCLP)
- Capable of remaining completely buoyant even after being saturated with hydrocarbons
- Meets or exceeds Stormwater Best Management Practices (BMP)
- Off ers non-point source pollution prevention
- Provides potential for long-standing remediation
- Does not require modification of existing structures
- Effective in fresh or salt water temperatures ranging from 32F to 130F

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AbTech Industries does not take any responsibility for handling, transport, disposal, or recycling of spent Smart Sponge® products. For a more detailed disposal/recycle overview, please see the "Smart Sponge® Products Disposal Option" documents available upon request from AbTech Industries.

AbTech Smart Sponge® products have been extensively tested both in the laboratory and in the field – with additional testing on-going all the ti me. Nevertheless, because local conditions, product use, and exposure can vary widely, individual results may diff er.

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Smart Pak® Technical Specifications

AbTech's Smart Pak® is designed for use in new or existing vaults that experience oil and grease pollution accompanied by sediment, debris and various other contaminants. Smart Pak® helps users meet and/or exceed stormwater NPDES permit requirements with effective filtration, absorption, life expectancy and maintenance costs. Smart Pak® products are constructed out of AbTech's patented Smart Sponge® media which is a non hazardous, material, and can be specified for a new variety of applications. AbTech's Smart Pak® allows Smart Sponge® technology to be scaled to virtually any size required in an easy-to-maintain form.

Engineered solutions to meet your design needs

- Smart Sponge Vaults
- Smart Sponge Custom Vaults

Key Features

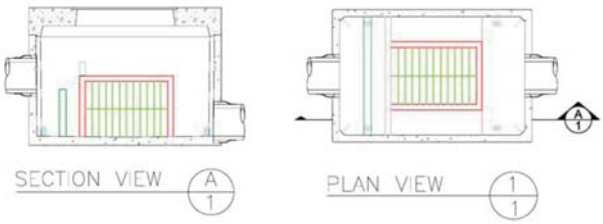
- Multiple contaminant treatment: trash/debris, sediment, hydrocarbons, and coliform bacteria, when specified with Smart Sponge® Plus.
- Smart Sponge Plus can be engineered using controlled test parameters (such as modifying flow rates and coliform bacteria concentration) to meet your performance requirements
- Applicable for in-line and off -line stormwater system applications
- Variable treatment capacity
- Multiple Designs: - online or offline flow, horizontal or vertical flow
- Capable of removing up to 3 times its own weight in hydrocarbons
- Does not leach or leak by fully encapsulating recovered oil
- Inhibits growth of mildew and mold
- Does not absorb water and is unaffected by salinity
- Used Smart Pak can be recycled as an energy source (BTU value of 10,000)

Smart Pak® Product Code	Description	Dimensions	Gross weight
SMPK-1515-3	Smart Sponge Filtration Module individually contained in porous fabric	15" x 15" x 3"	7.4 lbs. +/- 0.3
SMPK-1515-3-Plus	Smart Sponge Plus Filtration Module individually contained in porous fabric	15" x 15" x 3"	7.4 lbs. +/- 0.3
SMPK-1212-3	Smart Sponge Filtration Module individually contained in porous fabric	12" x 12" x 3"	4.75 lbs.+/- 0.2
SMPK-1212-3-Plus	Smart Sponge Plus Filtration Module individually contained in porous fabric	12" x 12" x 3"	4.75 lbs.+/- 0.2
SMPK-1512-3	Smart Sponge Filtration Module individually contained in porous fabric	15" x 12" x 3"	5.9 lbs.+/- 0.25
SMPK-1512-3-Plus	Smart Sponge Plus Filtration Module individually contained in porous fabric	15" x 12" x 3"	5.9 lbs.+/- 0.25
SMPK-1212-2.5	Smart Sponge Filtration Module individually contained in porous fabric	12" x 12" x 2 1/2"	3.95 lbs.+/- 0.2
SMPK-1515-2.5	Smart Sponge Filtration Module individually contained in porous fabric	15" x 15" x 2 1/2"	6.2 lbs.+/- 0.3

Key Benefits:

- **Flexible solution: retrofit existing installation or integrated into new vault design**
- **Easy and cost effective to maintain**
- **Lightweight, safe and easy to handle in the chamber sites**
- **Individually labeled for easy identification**

Smart Pak In-Line Vault



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New Installation

Smart Pak Change Out

Disposal Options

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Cement Kilns - This industry has used 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 - As discussed above, spent Smart Sponge® products have been classified as a solid waste and have been accepted at Subtitle D Landfills.

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Tubular Oil Absorbent Booms and Line Skimmers Technical Specifications

AbTech's Tubular Absorbent Booms and Line Skimmers employ the Smart Sponge® Absorbtive technology which rejects water while absorbing even sheen levels of hydrocarbons in low energy fl ow environments.Tubular Absorbent Booms and Line Skimmers are designed to absorb and encapsulate hydrocarbons and oil in non-confined water flows.

Applications

- Preserving Ecologically sensitive areas
- Coastal Marshlands
- Estuaries
- Grass flats
- Shellfish, Crustacean, Fishing and Breeding Grounds
- Boat Docks and Marinas
- Marine Fueling Locations
- Clarifying Wells

Key Benefits

- Removes or reduces sheen
- Does not absorb water
- Transforms pollutant into a stable solid waste
- Capable of remaining completely buoyant even aft er being saturated with hydrocarbons
- Oils will not leach or leak
- Waste to energy (BTU value of 10,000 - 18,000 based on type of contaminant)
- Improved safety - no dewatering of oily water aft er removal
- Longer life - will not deteriorate in water
- Products can be deployed long term and removed when convenient
- Lower labor costs
- Reduced risk - No water absorbed means less weight to pull from water
- Silent sentinel - remains on site indefinitely as insurance against potential releases

Product Specifications

4" Tubular Boom - Oil Spill Deployment

Shipping Quantity	Length of Boom (feet)	Weight of Smart Sponge (pounds)	Estimated Oil Recovered* (gallons)
Individual	10	17.5	5.9
Carton	50	87.5	29.5
Pallet	400	700	236.5
40' Container	16,000	28,000	9,459.5
53' Truckload	20,800	36,400	12,297.3

*Based on 2.5:1 absorption ratio. Total absorption may vary.

Line Skimmer - Oil Spill Deployment

Shipping Quantity	Length of Boom (feet)	Weight of Smart Sponge (pounds)	Estimated Oil Recovered* (gallons)
Carton	16	22.4	11
Pallet	480	672	318
40' Container	9,600	13,440	6,357
53' Truckload	12,480	17,472	8,264

*Based on 3.5:1 absorpti on rati o. Total absorpti on may vary.

Line Skimmer - Sheen Removal

Product	Dimensions	Dry Weight	Packaging
LS104-10	Single/4 ft . long	22 lbs.	10/carton
LS110-04	Single/10 ft . long	45 lbs.	4/carton
LS304-04	Triple/4 ft . long	32 lbs.	4/carton
LS308-04	Triple/8 ft . long	47 lbs.	4/carton
LS408-04	Quad/8 ft . long	60 lbs.	4/carton

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Smart Sponge Versus Commonly Used Polypropylene

Smart Sponge

Polypropylene

Smart Sponge

Polypropylene

Smart Sponge Absorptive polymers have a distinct advantage over traditional polypropylene booms used in oil spill cleanup. These photographs demonstrate that once oil comes in contact with Smart Sponge it is permanently encapsulate in the structure of the polymer cannot be released under any amount of pressure. This makes the Smart Sponge material operationally superior for removing sheen levels of hydrocarbons (15 – 300 ppm).

Disposal Options

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Passive Skimmer Technical Specifications

The Passive Skimmer is designed to absorb and encapsulate hydrocarbons by floating directly on the water in catch basins, sumps, oil/water separators and marine fueling stations. Passive Skimmers are made of a proprietary blend of polymers, called Smart Sponge®, packaged in flexible mesh containers and are available in a variety of sizes.

Applications

- Oil/Water Separators
- Hydrodynamic Separators
- Catch Basins
- Marine Fueling Locations
- Commercial Fuel Distributor Facilities
- Commercial Fuel Docks
- Gas Stations
- Parking Structures
- Waste Scrap Facilities

Key Benefits

- Chemically selective to hydrocarbons
- Reduce or remove sheen
- Transforms pollutant into stable solid
- Capable of remaining completely buoyant even after being saturated with hydrocarbons
- Stormwater BMP (Best Management Practice)
- Effective nonpoint source pollution prevention
- Long-standing remediation
- No modification of existing structure is required

Simple Maintenance

Installation of Passive Skimmers is a simple process requiring no structural modifications to existing drainage structures or oil/water separators. Users can simply tie off the passive skimmer with a rope through the grommets or through the center handle. Changeout of Passive Skimmers is also quick and easily accomplished by simply pulling the skimmer out and replacing it.

Passive Skimmers are not designed for use in fluid operating temperatures exceeding 130°F (55°C).

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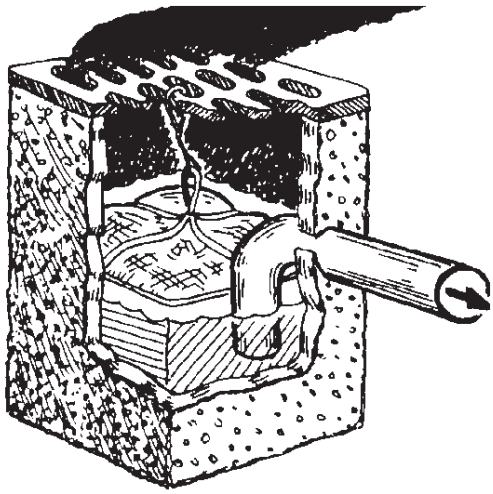
Product Specifications

Product	Dimensions	Unit Dry Weight	Packaging
PS1313	13” x 13”	1.05 lbs. (0.47 kg)	40/carton
PS1818	18” x 18”	2.10 lbs. (0.05 kg)	20/carton
PS2727	27” x 27”	4.2 lbs. (1.90 kg)	10/carton



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Ultra-Urban Filter Technical Specifications

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 low maintenance. It is a true water filter that ensures that the water fl owing through the system is properly and completely treated. This solution is used to treat stormwater runoff for new or retrofitted sites by absorbing oil and grease and capturing trash and sediment.

The Ultra-Urban Filter is ideal for municipal, industrial, and construction applications ensuring compliance with stormwater regulations. 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.

Applications

AbTech's Ultra-Urban® Filter is an ideal solution for new or existing applications.

It can be deployed in:

- Municipal Stormwater Drains
- Shopping Center Parking Lot Drains
- Parking Structures
- Airport Tarmac Drains and Fuel Farms
- Commercial Fuel Distributor Facilities
- Commercial and/or Residential Developments
- Truck Stops
-

How it Works

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.

Proven Performance

Field and laboratory tests have confirmed the capability of the Smart Sponge to absorb, depending on the type of oil contaminant, up to three times its own weight and remove up 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 filters have been tested to exceed 500 gpm for the DI2020 series at installation.

Key Benefits:

- **Low maintenance cycle**
- **Simple installation**
- **Easily maintained from the street**
- **Proven field performance**
- **Cost effective way to comply with stormwater regulations**

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Easy 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.

Low 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 typically be serviced in 10 minutes or less. Under normal operating conditions the Ultra-Urban Filter should be replaced every 1-3 years.

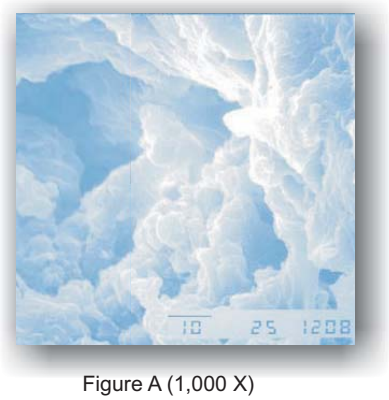


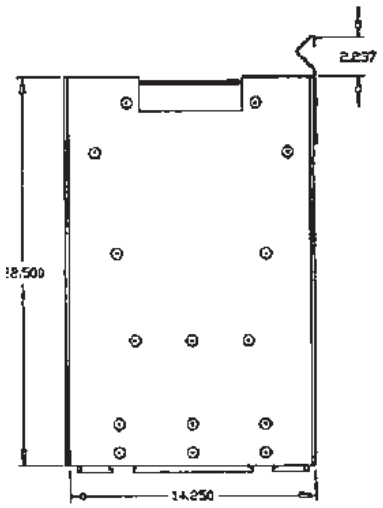
Figure A (1,000 X)

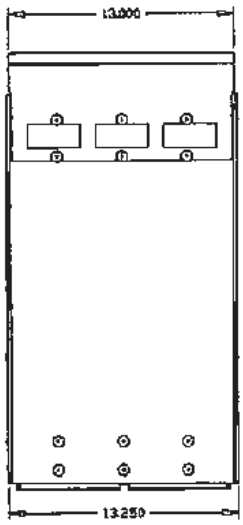
Proven Technology

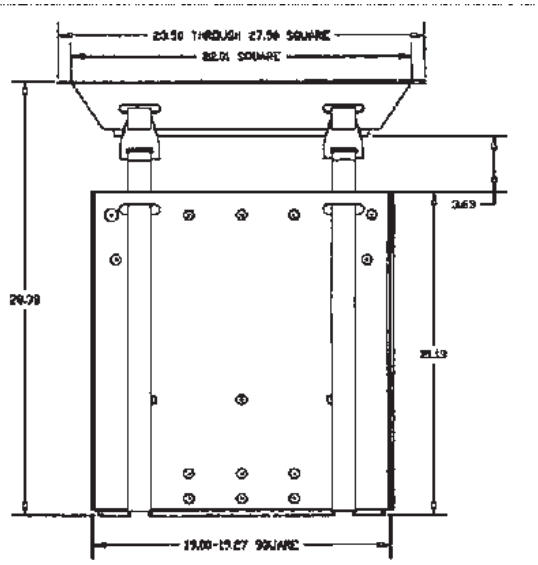
AbTech developed the Smart Sponge technology based on its proprietary blend of synthetic polymers aimed at removal of hydrocarbons and oil derivatives from surface water. AbTech's process creates a very porous structure (see Figure A) with hydrophobic and oleophilic characteristics capable of selectively removing hydrocarbons while allowing high fl ow through rates for water. As hydrocarbons are absorbed into its structure, the Smart Sponge® swells and maintains porosity and filtering capabilities.
should be replaced every 1-3 years.

Ultra-Urban® Filter Drawings

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







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Ultra-Urban® Filter Key Features

Part #	Description	Dimensions	Gross Weight (approx.)	
			With Smart Sponge®	Trash & Debris Only
Curb Opening Module:				
CO1414N	UUF, Normal Size	13.25” x 14.25” x 22.5”	20 lbs.	5.5 lbs.
CO1414H	UUF, Half Size	13.25” x 14.25” x 13”	13 lbs.	4.5 lbs.
Drain Insert Module:				
DI1414N	UUF, Normal Size	13.25” x 14.25” x 21.125”	20 lbs.	5.6 lbs.
DI1414H	UUF, Half Size	13.25” x 14.25” x 13”	13 lbs.	4.5 lbs.
DI1420N	UUF, Normal Size	14” x 19.25” x 21.125”	24 lbs.	6.5 lbs.
DI1420H	UUF, Half Size	14” x 19.25” x 13.375”	18 lbs.	5.0 lbs.
DI1616N	UUF, Normal Size	16” x 16” x 21.125”	24 lbs.	6.5 lbs.
DI1616H	UUF, Half Size	16” x 16” x 13.375”	18 lbs.	5.0 lbs.
DI2020N	UUF, Normal Size	19.25” x 19.25” x 21.125”	30 lbs.	7.5 lbs.
DI2020H	UUF, Half Size	19.25” x 19.25” x 13.375”	22 lbs.	6.0 lbs.

Disposal Options

As local conditions, product use, and exposure can vary widely, the end user must determine the most appropriate disposal method for a spent Smart Sponge® product. However, Smart Sponge® samples saturated with hydrocarbons, both in the lab and in the field, have been tested according to the EPA's Toxicity Characteristic Leaching Procedure (“TCLP”). These tests show that Smart Sponge® is a “non-leaching” (i.e., non-detect or “N.D.”) product. As a result, Smart Sponge® technology can afford many cost effective and environmentally friendly disposal options. The following waste disposal and resource recovery industries have accepted spent Smart Sponge® products for disposal and/or recycling.

Waste-to-Energy Facilities - A specialized segment of the solid waste industry has used 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 and is a participant in the Department of Energy's National Renewable Energy Program.

Cement Kilns - This industry has used 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 - As discussed above, spent Smart Sponge® products have been classified as a solid waste and have been accepted at Subtitle D Landfills.

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Please keep in mind that, depending upon local conditions, product use, and exposure, a spent Smart Sponge® product could contain one or more of a wide range of contaminants that may impact available disposal options. As a result, generators of spent Smart Sponge products must have their waste analyzed, tested, and classified to determine the appropriate disposal method.

AbTech Industries does not take any responsibility for handling, transport, disposal, or recycling of spent Smart Sponge® products. For a more detailed disposal/recycle overview, please see the “Smart Sponge® Products Disposal Option” documents available upon request from AbTech Industries.

AbTech Smart Sponge® products have been extensively tested both in the laboratory and in the field – with additional testing on-going all the ti me. Nevertheless, because local conditions, product use, and exposure can vary widely, individual results may diff er.

AbTech Smart Sponge® products must be used properly and in accordance with all manufacturer instructions. AbTech Industries does not take responsibility for any product misuse.

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Westchester County Airport Installs AbTech's Catch Basin Inserts to Protect Surrounding Waterways and Minimize Environmental Impacts

Westchester County's Airport Environmental Management System

Westchester County Airport is the third in the nation to be certified by the ISO 14001 Standard. The airport's ISO certified
Airport Environmental Management System (AEMS) includes all activities at the airport, a 703-acre facility owned by Westchester County, providing corporate aviation, light general aviation, and commercial airline services with related aviation support facilities.
A significant part of the AEMS is the plan to protect waterways surrounding the airport from polluted runoff caused by chemicals such as fuel, oil, grease, and de-icing fluid. To minimize these potential environmental impacts, the county

Project Challenge

Ten years ago, Westchester County was one of over 80 governmental agencies and environmental groups to sign an historic Memorandum of Agreement to protect New York City's drinking water supply for 9 million New Yorkers without compromising the economic vitality of the watershed communities.
New York City's drinking water supply watershed provides water to one of the most important cities in the world and too many Westchester communities. Because water quality issues go beyond the political or geographical boundaries of any one municipality or agency, many governmental agencies must work together to protect water quality throughout the watershed.
The New York City watershed covers an area of over 1,900 square miles in the Catskill Mountains and the Hudson River Valley. The watershed is divided into two reservoir systems: the Catskill/Delaware watershed located west of the Hudson River and the Croton watershed, located east of the Hudson River.
The Kensico Reservoir, is located in Westchester County and is the final stop for 90% of New York City's drinking water supply before it enters the water tunnels that carry it to household faucets.
The two reservoir systems deliver approximately 1.4 billion gallons of water each day to the people in New York City, areas of Orange, Putnam, and Ulster Counties, and much of Westchester County. The Westchester County Airport Environmental Department coordinates with the New York City Department of Environmental Protection (DEP), which is charged with protecting the water quality of the Kensico Reservoir along with the rest of the New York City water supply system.
About one third of the northern portion of the airport is located within the Kensico watershed; therefore, the airport's water quality protection program is critical.

Project Description

The 54 AbTech catch basin inserts that have been installed in critical storm drains surrounding the airport use a filtration material, called the Smart Sponge®, which comprises a blend of polymers that effectively absorbs contaminants from water.
Smart Sponge technology has a unique molecular structure based on polymer technologies that are chemically selective to hydrocarbons. Polymers are composed of molecules that chemically react to form large molecules. The non-leaching Smart Sponge

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permanently bonds with oil, gasoline, and grease, transforming these liquid petroleum hydrocarbons into a manageable solid waste that forms a gel-like structure. The filtration material is recyclable and provides a complete, closed-loop solution for removing pollutants from water. 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.

Project AbTech Industries' Solution Ideal for Airports

AbTech's Smart Sponge® technology comprises a blend of polymers that effectively absorbs contaminants from water. The county targeted critical storm drains – curbside, roadside, along taxiway areas, and on the open tarmac. When spills occur within these areas, the filters are used as a first line of defense. Each AbTech filter
can handle 5 to 8 gallon spills, which suits the airport's needs because most spills at the facility are less than
five gallons.
Michael Parletta, Westchester County Airport's Environmental Officer said that another advantage of the filters is that they are easy to replace and easy to monitor. “We can physically see the filters and can determine the remaining capacity by lift in gthemout, cleaning out the sediment, and weighing them.”

What Others are Saying about the Project

“AbTech catch basin filters are perfect for capturing hydrocarbons, oil, and grease in stormwater runoff . . . We know that despite our aggressive spill prevention and response program, if we don't get to a spill before it reaches the storm drain, the filters can handle them.”

Michael Parletta, Westchester County Airport's Environmental Officer

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The City of Long Beach USA Successfully Deploys Progressive Stormwater Solution to Help Prevent Harmful Bacteria From Contaminating City Beaches

The City of Long Beach

The City of Long Beach occupies a land area of about 50 square miles; operates and maintains an international deep-water harbor; manages close to 2,000 oil wells; has 11 linear miles of beaches covering 541 acres, operates two city owned marinas, oversees 468 acres of navigable waterways, manages the Southeast Resource Recovery Facility (SERRF), and hosts a regional airport. The City faces many challenges and opportunities to continue its environmental leadership role.

Project Challenge

The City of Long Beach is located south of Los Angeles and bordered by the Los Angeles and San Gabriel rivers. It faces significant environmental challenges with one of the most pressing issues being the ability to maintain and improve receiving water quality. To compound these environmental challenges, the Los Angeles and San Gabriel Rivers run along the east and west borders of the city carrying urban and stormwater runoff and pollutants from over 80 Southern California cities directly to its ocean and beaches. The Colorado Lagoon , San Gabriel River, and Los Angeles River are 303(d) listed and impaired for constituents such as copper, algae, oil, lead, zinc, and coliforms and impact Long Beach economically and environmentally. The City in search of a solution, took innovative and proactive action by seeking and allocating funding for the Long Beach Stormwater Project.

As part of this progressive environmental effort, the City of Long Beach launched a clean water initiative that resulted in the deployment of an innovative stormwater filter called the AbTech Ultra-Urban® Filter (UUF) with Smart Sponge® Plus technology. The technology and product were chosen by the City based upon a matrix of product attributes. Perhaps most significant was the Smart Sponge technology's ability to inactivate bacteria and other health-threatening pathogens while providing removal of trash, sediment, and hydrocarbons.

Project Description

Within the City limits, there are about 383 miles of active storm water carriers, which include pipes, open channels, ditches, culverts, connector

pipes and drains. Of those carriers, 180 miles are City-owned, 142 miles are Los Angeles County-owned, and 40 miles are Caltrans-owned with various

other owners making up the difference. The City maintains 5.5 miles of channel and ditches. Los Angeles County has 32 miles of open flood control

channels, i.e.; Los Angeles River, San Gabriel River, Los Cerritos Channel, etc. Caltrans has 11 miles of channels and ditches. In addition, the City of

Long Beach has an approximate population of 465,000 people. A comprehensive stormwater management program was developed to protect the city's waterways from nonpoint-source pollution. This Project was one of several initiatives funded by the City of Long Beach in an effort to better manage \ stormwater runoff. An integral part of this program involved the use of Ultra-Urban Filters (UUFs).

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The City of Long Beach sought to exceed its compliance with local, State and Federal water quality guidelines as mandated by the Federal Clean Water Act and RWQCB-issued TMDLs, initiated a two-phase program. In the first phase, the City deployed 1,318 UUF catch basin insert filters in 328 catch basins (approximately 10% of the citywide total of 3,300). In the second phase, the City installed an additional 529 inserts in 175 catch basins for a total of 1,904 inserts in 503 catch basins (15% of the citywide total). The City gave installation priority to drains that are tributary to waters used for recreation. A wide variety of installation locations were selected based on land use, projected pollutant loads and beneficial use designation.

The results of the Project indicate that AbTech Industries' Ultra-Urban® Filter (UUF) with Smart Sponge Plus can significantly improve water quality by intercepting large quantities of oil, grease, debris, and sediment. Over a three-year period, it was estimated that AbTech's Ultra Urban Filters removed over 90,000 pounds of total contaminants (trash, debris, sediment, oil, grease, organics, and heavy metals). Of the total contaminants captured, approximately 25,000 pounds were oil derivatives (i.e. volatiles, light hydrocarbons and heavy hydrocarbons). The City's decision to use Smart Sponge essentially prevented over 3,600 gallons of hydrocarbons from entering the ocean and surrounding water bodies.

What Others are Saying about the Project

Our number one priority is to protect the public's health. With over 11 miles of public beaches and Colorado Lagoon, one of the few remaining inland recreational water bodies, the presence of bacteria and other harmful pathogens in our stormwater and urban runoff poses risks to human health, particularly aft er heavy rainfall. “I am pleased with the results of the pilot program in dramatically reducing bacteria in our stormdrains and thus allowing us to keep our beaches safe and open to the public. We hope to receive continued support from local and federal officials to sustain our eff orts and expand the program
Tom Leary, Stormwater Management Division Officer, Long Beach Public Works Department

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