

NAYLOR
DRAINAGE

Made in the UK
Excellent Construction Products

Introducing . . .

SMART GULLY

The smarter way to
remove hydrocarbons
from stormwater



The New Smart Gully is a dedicated suite designed for quick and easy installation in any type of gully without the use of any mechanical or electrical machinery.



The Smart Gully pictured in place showing the high visibility markings and finger entry points to enable the swift replacement of the Smart Sponge® Cartridge.



The clever push fit design incorporates a finned rubber gasket ensuring a snug fit whilst acting as a bung ensuring no loss of engineering design.

Smart Gully incorporates the unique Smart Sponge® Technology that removes Hydrocarbons from Stormwater.

The Smart Sponge® technology is based on its proprietary blend of synthetic polymers aimed at removal of hydrocarbons and oil derivatives from surface water.

This unique process creates a very porous structure 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.

The Smart Sponge® unique molecular structure is based on innovative polymer technologies that are chemically selective to hydrocarbons.

Smart Sponge® fully encapsulates recovered hydrocarbons, resulting in a substantially more effective response that prevents absorbed hydrocarbons from leaching.

Smart Sponge® is also capable of removing low levels of hydrocarbon from stormwater flow successfully removing sheen.

The Smart Sponge® technology remains buoyant in calm or agitated water, allowing it to remain in place until fully saturated and resulting in no wasted product.

The Smart Sponge® technology transforms the pollutants into a stable solid waste for easy recycling either as a waste to fuel energy or a landfill waste. Waste clarification required.

Smart Sponge® waste to energy finalises the closed loop solution with the spent Smart Sponge creating 10000-14000 BTU with no resulting waste product.

Smart Sponge® can also be used as an antimicrobial technology capable of destroying disease causing micro organisms from surface water such as E-Coli, Streptococcus and Legionnaires to name but a few.

Smart Sponge® Plus features an antimicrobial agent chemically and permanently bound in a proprietary process to the **Smart Sponge®** polymer surface which destroys bacteria.

Due to this permanent bond, the antimicrobial agent is active but does not leak or leach, avoiding any downstream toxicity issues.

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 destroy bacteria.

The **Smart Sponge®** Plus mode of action, through its bound agent, is very simple.

No Chlorine or heavy metals are involved and in surface bound applications it neither introduces chemicals into the treated water nor produces toxic metabolites.

The antimicrobial mechanism is based on the patented agents interaction with the micro-organism cell membrane,

causing micro-organism inactivation, but no chemical or physical change in the agent.

Antimicrobial activity therefore does not reduce the agents capability or cause its depletion, and maintains long term effectiveness.

Additionally the hydrocarbon absorption capability is not inhibited allowing both antimicrobial and hydrocarbon removal at source.

Field and laboratory tests (USA) have confirmed the capability of the **Smart Sponge®** to Absorb, depending on the type of oil containment, between 2 and 4 times its own weight.

Smart Sponge® technology can remove up to 95% of the Hydrocarbons present in Stormwater runoff, typically in the range of 5 to 30mg/liter (ppm).

Smart Sponge® technology is currently on test with Wiltshire County Council with Hampshire County Council doing all of the independent testing.

The Technology

Smart Sponge®

Chemically selective to hydrocarbons:

- Removes sheen
- Transforms pollutants into a stable solid
- Non-leaching
- Fully recyclable

Smart Sponge® - a proprietary polymer technology unique in its ability to effectively remove, absorb and retain hydrocarbons from flowing or pooled water. **Smart Sponge®** technology maximises the effectiveness of its oil-absorbing polymers by forming them into an extremely porous structure that allows effective, longlasting absorption, without clogging or channeling, which is common among any other filtration media in a powder, particulate or fibre form.

The **Smart Sponge®** polymers are also hydrophobic and oleophilic – allowing water to pass through while hydrocarbons are absorbed. The structure is so effective, that even as it swells with contaminants, high flow rates and filtering capabilities are still maintained. Field and laboratory tests have confirmed the **Smart Sponge®** capacity to absorb up to five times its own weight (depending on the type of oil contaminant) and remove up to 95% of the hydrocarbons present in stormwater runoff.

Smart Sponge® Plus

Smart Sponge® Plus – has all the features of standard **Smart Sponge®** as well as the dual-action capability of destroying several disease-causing micro-organisms from surface water such as:

- Aspergillus Niger
- Trychophyton Mentagrophytes
- Penicillium Pinophilum
- Chaetomium Globosum
- Trichoderma Virens
- Aureobadisium Pullulans

The anti-microbial agent used for this innovative technology is an organosilane derivative used widely in a number of fields and applications. The anti-microbial mechanism of the **Smart Sponge® Plus** is based on the agent's electromagnetic interaction with the microorganism cell membrane. Consequently, the anti-microbial action is not depleted over time and maintains long-term effectiveness.

In the **Smart Sponge® Plus**, the anti-microbial agent is chemically and permanently bound to the polymer surface and serves to control fungi, static, odor and mildew as well. Test results demonstrated the maximum bacterial removal rates of the **Smart Sponge® Plus** in both dry and wet weather sampling for fecal coliform ranged from 89.4 to 99.6 percent; and for Enterococcus, 96.2 to 99.9 percent.

Absorbent vs. Adsorbent

The **Smart Sponge®** proprietary blend of polymers is oleophilic – an absorbent, which means that hydrocarbons are bonded within its chemical matrix. Therefore, absorption is permanent and saturated product cannot be washed off, squeezed out, or leached from the material during subsequent rain events. Once absorbed, those pollutants

are transformed into a stable solid for easy recycling, providing a closed-loop solution to water pollution. Traditional absorbents lack this absorbent characteristic, instead they feature an adsorbent capability that merely attracts hydrocarbons to their surface, but cannot prevent them from leaching back into the environment.

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