AFM®
ACTIVATED FILTER MEDIA

DRYDEN AQUA
SUSTAINABLE WATER QUALITY
DISTRIBUTION

BioGuard®

THE BEST **FILTRATION** MEDIA

POWERFUL **FEATURES**

Self-sterilizing surface
resistant to bacterial growth

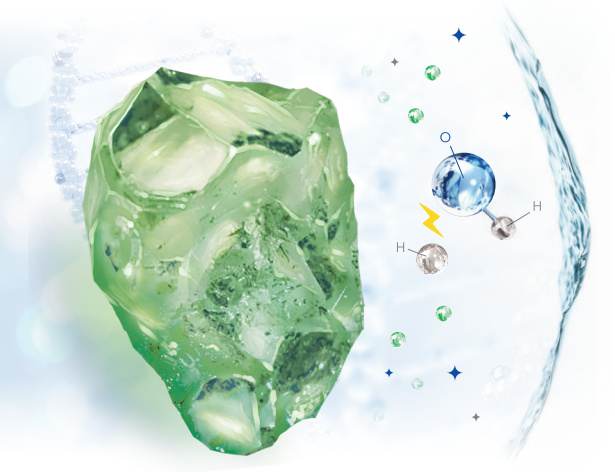
Increased surface area for superior filtration properties

Activated surface charge for the adsorption of fine particles and organic matters

WHAT IS **AFM® ?**

Result of 35 years of Reseach & Development, AFM® (Activated Filter Media) is a direct replacement for sand that can be installed in all types of sand filters without modifications.

Manufactured from green and brown glass, AFM® is exposed to a unique activation process to **become self-sterilizing and acquire superior mechanical & electro-static filtration performance.**



UNIQUE **BENEFITS**

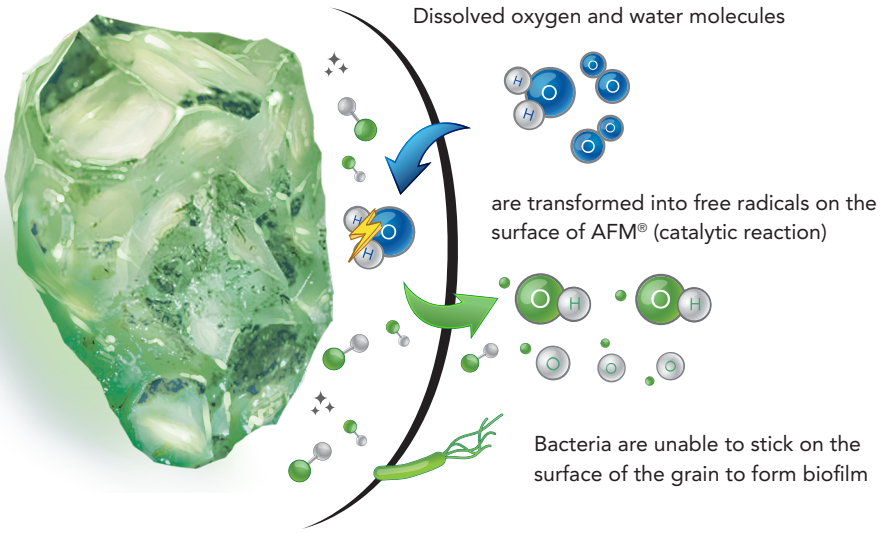
- **The safest water :** Prevents the transmission of pathogens (E.g. Crypto)
- **The clearest water :** Offers a stable 1 micron filtration rate.
- **The healthiest air :** Prevents the formation of DBPs and chlorine smells.
- **The lowest operating costs :** Saves backwash water and chemicals.
- **The most sustainable filtration :** Outlasts all other filter media.

AFM® is the only glass filter media certified for pools (NSF50) and drinking water (NSF61)

ifts
Tested and certified as the best filtration media by the IFTS.

THE HEALTHIEST **SWIMMING EXPERIENCE**

▶ Self-sterilizing surface fully resistant to bacterial growth

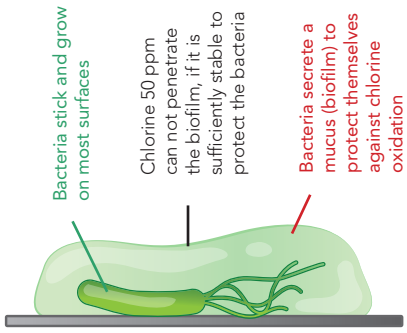


Unique 100% bio-resistant filter media

One of the main differences between AFM® and other filter media such as sand and crushed glass is its bio-resistance. When in contact with water flowing through the filter, a small amount of free radicals ($O^{\cdot}$ and $OH^{\cdot}$) are formed on the surface of the grains. **Thanks to their strong oxidation potential, free radicals protect AFM® from colonisation by bacteria and fully prevent the formation of biofilm.**

▶ How do bacteria survive in a swimming pool ?

Within just a few days, bacteria will colonise all surfaces in contact with water. **The largest surface in contact with water in a swimming pool is the quartz sand in the filter.** 1 m^3 of quartz sand has a surface of 3000m^2 and it is an ideal breeding ground for bacteria. Bacteria will attach to the surface of the sand grains and, within seconds, will form a biofilm that protects them from oxidants. In this protective biofilm, bacteria can grow and multiply. Even high chlorine concentrations and good backwashing cannot stop this development completely.



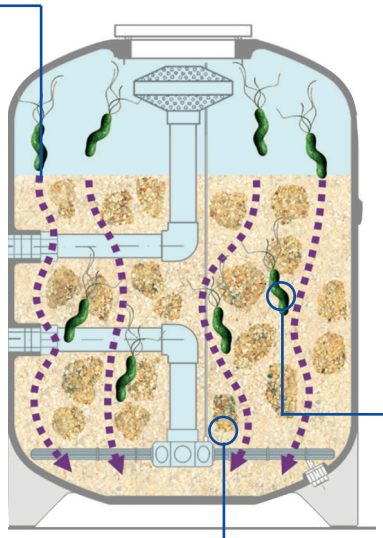
Bacteria cling to surfaces (walls, floor, piping systems and especially in the filter media)

The 3 main problems of biofilm

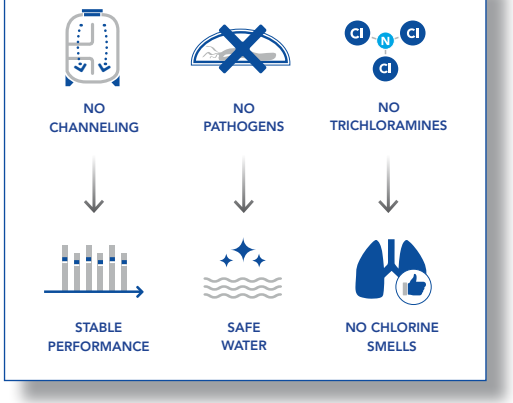
INCONSISTANT AND UNRELIABLE FILTRATION 1

After 6 – 12 months, biofilm on the sand has developed to a degree where the grains stick together, forming clumps and causing channelling of the filter bed that reduce filtration performance and allow unfiltered water to reach the bathers.

Filtration performance with AFM® is predictable, reliable, and remains stable over the years. There is no possibility of unfiltered water reaching the pool.



YOUR BENEFITS



2 PATHOGENS

The filter develops into a breeding ground for pathogens, such as legionella and pseudomonas. Periodically, bacteria flocs will break through the filter. **AFM® prevents the growth and the transmission of these pathogens. Pool water is therefore much safer.**

TRICHLORAMINE - CHLORINE SMELL 3

Pool users add sweat and urine in the pool water. They consist of 80% of urea. Bacteria in the biofilm convert this urea into ammonia which then reacts with chlorine to form inorganic chloramines (mono-, di- and tri-chloramine). Trichloramine (NCl_3) is very volatile and is responsible for the unpleasant chlorine smell. It is also a severe health hazard causing skin, eye and lung irritation. With **AFM®, there is no biological conversion from urea to ammonia inside your filter : No biofilm ▶ No trichloramine ▶ No chlorine smell !**

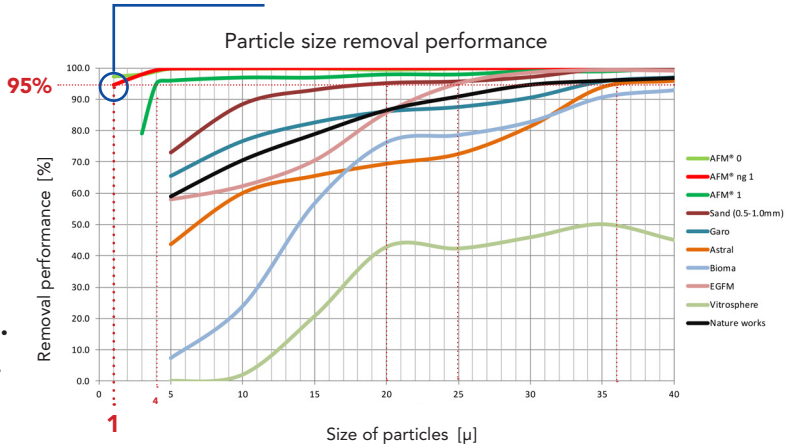
THE HIGHEST PERFORMING **FILTER MEDIA**

▶ AFM® offers the finest filtration

AFM® filters much finer than quartz or glass sand. The independent and best-known European laboratory for filtration tests IFTS (www.ifts-sls.com) has tested AFM®, quartz sand and various glass sands. The tests were conducted with fresh filter media without any biofilm. At 20m/h filtration velocity, without the addition of flocculants, the following results were achieved:

- **AFM® ng**: Filters 95% of all particles down to **1 micron.**
- **AFM®** : Filters 95% of all particles down to **4 microns.**
- **Sand**: Filters 95% of all particles down to **20 microns.**
- **Glassand**: Filters 95% of all particles **>25 microns.**

AFM® ng : A certified 1 micron filtration rate



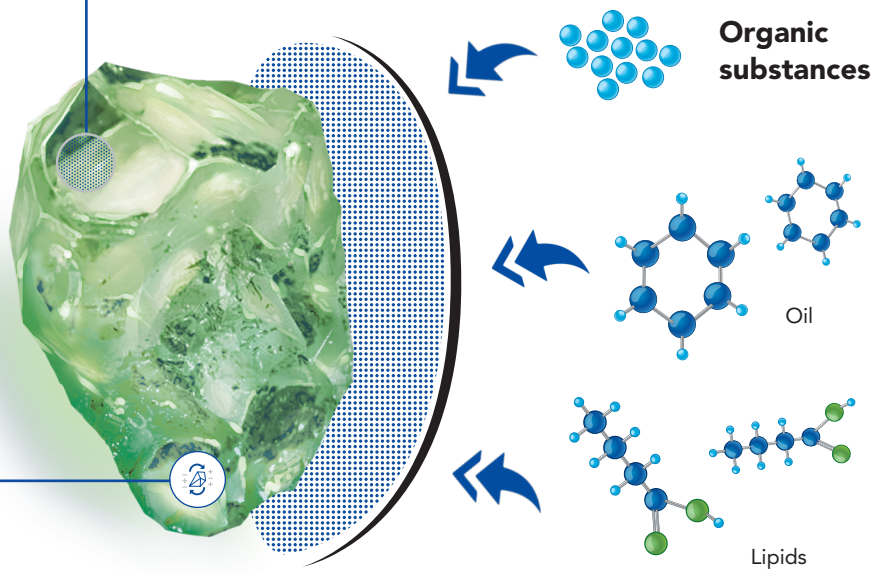
Source: IFTS Test data, France

WHAT MAKES AFM® PERFORM **BETTER THAN OTHER FILTER MEDIA ?**

Superior mechanical filtration and adsorption properties

MESOPOUROUS STRUCTURE

Our patented activation process creates a mesoporous structure to strongly increase the surface area (m^2) of AFM® in contact with water. This feature enables AFM® to **mechanically capture more particles than sand and other glass filter media and offers a much larger surface for the adsorption of fine particles.**



ACTIVATED SURFACE CHARGE

Our activation process modifies the surface charge of the glass to give AFM® unique adsorption properties. The activation of the glass enables AFM® to remove particles down to 1 micron and **about 50% more organic substances than sand and other glass filter media.**

SCAN TO SEE ACTIVATION!

WHY IS ACTIVATION IMPORTANT ?

Reduced chlorine consumption

It is easy to remove large particles but it is the sub 5 micron that are difficult to remove and in this particle size range AFM® excelled. Everything that can be filtered out and removed in the backwash process doesn't have to be oxidised with chemicals. The greater filtration efficiency of AFM® therefore saves chlorine and acid. **Chemical savings are approximately 20% to 30%.**

Crystal clear water and the best air quality

Chlorine is an excellent disinfectant. But in reaction with organic substances it also produces undesirable, toxic reaction by-products called Trihalomethanes (THMs), including chloroform. Thanks to its very large activated surface, AFM® can remove far more organic substances than sand or glass sand. The better the filtration - the lower the chlorine consumption and less disinfection by-products are produced. **AFM® reduces by up to 50% the formation of chloroform and other THMs.**

BENEFITS

1 MICRON
ULTRA FINE FILTRATION

EXCEPTIONAL WATER CLARITY

↓ Cl
LESS CHEMICALS

↓ THMs
UP TO 50% LESS THMs

THE LOWEST **OPERATING & MAINTENANCE COSTS**

▸ Up to 50% less backwash water

Sand needs - according to DIN standards - to be backwashed at 60m/h for 5 minutes or longer. **AFM® only needs 40 to 50 m/h backwash velocity**. The backwash efficiency is higher, because no biofilm is coagulating the grains and a backwash duration of 4 minutes is enough to remove all particles. As a result, approx. 50% of the backwash water can be saved. Water costs are approx 2€€/m³ for water and 3€€/m³ for heating and treatment.

▸ Filter maintenance

A major cost factor is the cost of replacing the media (removal, disposal and filling with new media). These costs are the same for AFM® and sand, but the life expectancy of AFM® is much higher than sand. **AFM® outlasts all other filter media and offers a guaranteed return on investment.**

BENEFITS

- WATER SAVINGS
- ENERGY SAVINGS
- SUSTAINABLE FILTRATION

ADAPTED TO **ALL TYPES OF SAND FILTERS**

▸ For the best filtration results and energy savings :

Use ideally AFM® with a variable speed pump and set your pump's speeds as follows using a flowmeter :

Filtration speed : 15 to 30m/h
Example: 20 x filter surface (m²)
= Filtration flowrate (m³/h)

Backwash speed : 40 to 50m/h
Example: 40 x filter surface (m²)
= Backwash flowrate (m³/h)

GRADE 1
0.4 - 0.8 mm

GRADE 2
0.7 - 2.0 mm

▸ Important note:

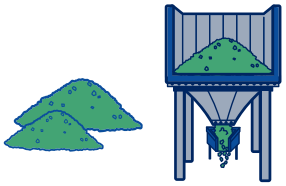
For smaller filters (<800 mm diameter) and for all filters with nozzle plate beds, irrespective of filter diameter, use **50% of AFM® Grade 1 and 50% of AFM® Grade 2**. AFM® 3 is required for larger diameter filters to ensure adequate water flow. AFM® is supplied in 21 kg and 25 kg bags or 1000 kg big bags. AFM® density = 1'250 kg/m³.

25kg of sand
= 21kg of AFM®

THE MOST SOPHISTICATED AND **SUSTAINABLE MANUFACTURING PROCESS**

Our production is the most sophisticated glass processing factory in the world. **We produce 100% of the power needed to run the factory** using solar panels and heat recovery systems. The glass is **washed in a unique sustainable loop using rain water**. We optimise every part of the process to make the best material available, with the best shape and size for our applications. We ensure that our product has no sharp edges that can injure you or damage the filter.

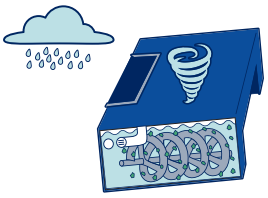
1



MADE FROM RECYCLED GLASS

When mining sand, landscapes are destroyed and entire ecosystems disappear. Processing and transport are energy inefficient. AFM® is manufactured from recycled glass, a raw material that already exists and needs to be reused.

2

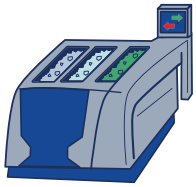


Watch our manufacturing process video

THE PUREST GLASS

AFM® is cleaned, washed and sterilized to become the purest glass filter media on the market with a maximum loose **organic contamination of less than 10g/ton.** Normal glass sand has up to 20,000g/ton.

3



CAREFULLY SELECTED

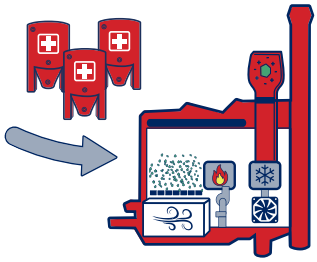
We only use green and brown glass in the manufacture of AFM® because white glass does not contain the metal oxides needed to make the media self-sterilizing. **AFM® contains more than 98% green and brown glass.**

4

OPTIMUM SIZE & SHAPE

The grading process of AFM® has been engineered to obtain **a precise consistent particle size and shape.** The sphericity and uniformity coefficient are crucial for the outstanding hydraulic properties of AFM®.

5



UNIQUE ACTIVATION PROCESS

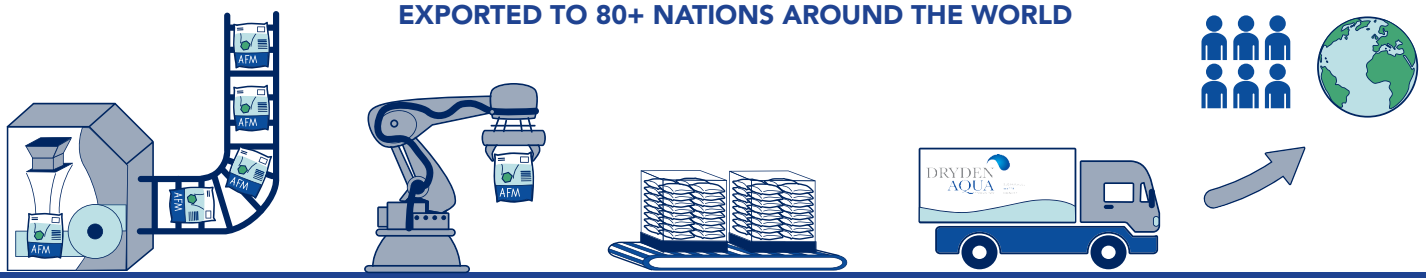
The raw AFM® goes through a **unique three-step chemical and thermal activation process.** The Activation is the reason for its bio-resistance and superior filtration properties. The surface of AFM ng becomes hydrophobic.

6

MOST CERTIFIED FILTER MEDIA

AFM® is manufactured under ISO9001-2015 conditions and is certified under DWI EC Reg31, NSF50 & NSF61 **for swimming pools and potable water use** and HACCP certified **for food and drinks markets.**

EXPORTED TO 80+ NATIONS AROUND THE WORLD



SAVE THE OCEANS, **SAVE THE PLANET!**

DRYDEN AQUA DISTRIBUTION SUSTAINABLE WATER QUALITY

GOES GLOBAL OCEANIC ENVIRONMENTAL SURVEY

Dryden Aqua supports GOES Foundation to save coral reefs and restore plankton levels in our oceans

70% of the oxygen we breathe is generated by plankton

These microscopic plants (phytoplankton) and animals (zooplankton) absorb more than 50% of our CO_2 emissions. They are the basis of our food chain and the lungs of our planet. Quite simple, All life on Earth depends upon plankton.

A clean ocean is the most efficient way to fight climate change at the lowest cost.

Toxic chemicals and microplastics are killing our plankton

Over the last 50 years, we have killed 50% of our plankton (Source: NASA). Some of the worst killers are Oxybenzone, PCBs, PBDE, Methyl Mercury, DBT & TBT. Once in our oceans, these chemicals mix with microplastics and stick to them. When the plankton eat the microplastics, the toxic chemicals enter plankton and kill them.

In a clean ocean, plankton will be able to recover super fast and absorb double the amount of CO_2 !

WHAT WE CAN DO TO STOP CLIMATE CHANGE

USE OCEAN SAFE SUNSCREEN

Over 10,000 tons of sunscreen gets dumped in our oceans each year. 1 bottle of sunscreen containing Oxybenzone will kill coral in an area the size of 10 olympic pools. Switch to sunscreens that contain Zinc oxide and titanium dioxyde. Do not use sunscreen containing oxybenzone, octinoxate or Ethylhexyl Methoxycinnamate.

USE OCEAN SAFE BEAUTY PRODUCTS

Stop using toothpaste containing Triclosan. A 100g tube of toothpaste containing 0.5% triclosan would kill all plankton life in a volume the size of 50 Olympic sized swimming pools!

Avoid using beauty products that contain Polyethylene and polypropylene like exfoliating face wash. 1 tube can contain up to 300'000 plastic microbeads.

IMPROVE OUR WATER TREATMENT

Public wastewater treatment plants currently fail to remove 90% of toxic chemicals in the wastewater and they build up in the marine ecosystem.
Adding tertiary treatment to wastewater will deliver a 10 fold reduction of chemical pollution.

The cost would be about 200 - 400 euros per person only!

There is 20,000 tonnes of Oxybenzone used in sunscreen every year, sufficient to kill all marine life in all the oceans if it were added all at the one time. Life on earth cannot continue, if we lose all life in the oceans, but this will happen in 25 years unless we stop the pollution.

DRYDEN AQUA
DISTRIBUTION

SUSTAINABLE
WATER
QUALITY

Watch our AFM®
e-learning video

Dr. Dryden is a marine biologist specialising in swimming pool water treatment. His mission is to eliminate toxic disinfection by-products and provide the best air and water quality on the market. For over 35 years, Dr. Dryden has been working with chlorinated systems for Dolphins and other aquatic mammals before successfully introducing his technology to the pool industry. Today, as a testament to the performance, safety and benefits of his water treatment solutions, over 500'000 swimming pools worlwide are using Dryden Aqua products.