

# APF®

## 多光谱凝结絮凝剂为您带来最佳的凝结和絮凝效果

All Poly Floc For the best coagulation and flocculation



APF®可用于氯消毒或臭氧消毒的海洋哺乳动物维生素系统

APF® for chlorinated and ozonated Zoo and Marine Mammal LSS

### APF®是什么？

APF®是一种多光谱凝结絮凝剂，能够清除溶液中的污染物质，将细小的悬浮物，如皮肤细胞，细菌等絮凝成大的颗粒物，使其容易被AFM®清除。

没有一种凝结或絮凝剂能够去除水中的所有杂质。APF®使用6种电解质和聚合电解质组合而成，以保证清除最多的杂质。水的溶解成分中80%为氧化物，20%是悬浮固体。被过滤的物质不需要被氧化。当正确的絮凝作用与AFM®共同发生作用时，氧化物减少，氧化还原电位上升。在氯消毒系统中，消毒副产物可减少80%。

APF® is a multi-spectrum coagulant and flocculant that removes pollutants from solution and flocculates fine suspended solids, such as skin cells and bacteria, into large particles that are easily removed by AFM® (Activated Filter Media).

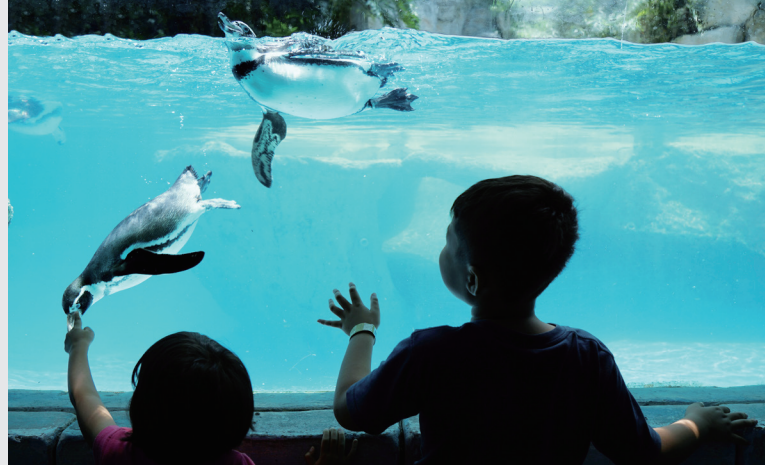
No single flocculant or coagulant can remove everything from the water. APF® is a precise combination of 6 different electrolytes and polyelectrolytes to cover the widest possible range. Dissolved constituents of water make up 80% of the oxidation demand and suspended solids around 20%. Everything that is filtered out does not need to be oxidised. When the correct flocculation is used in combination with AFM®, oxidation demand is reduced and mnRedOx potential increases.

In chlorinated systems unwanted disinfection by-products are reduced by up to 80%.



絮凝过程举例

Example of a flocculation process



### APF®的效益，一目了然: Your benefits at a glance

#### ■ 干净且安全

APF®能够确保细菌，寄生虫如隐孢子虫、梨型虫、分支杆菌等能够最大限度地被清除。

#### ■ 经济且环保

提高过滤效果的同时，降低80%氧化物用量。因此消毒副产物更少。使用成本更低，对环境影响更小。

#### ■ 为生物系统创造无氯水处理条件

APF®是海洋馆维生素系统中无氯水处理的重要一步，同时需配合AFM®过滤使用。

#### ■ For sanitary security

APF® is required to optimise removal of bacteria, parasites such as Cryptosporidium, Giardia and Mycobacterial parasites (Candida, Aspergillus etc).

#### ■ Economic and environmental

Improved filtration reduces oxidation demand by up to 80%. It also means there will be fewer disinfection by-products formed. Operating costs will be lower and there will be less of an impact on the environment.

#### ■ For chlorine-free treatment in biological systems

APF® is an important aid in chlorine-free water treatment of aquatic mammal LSS in combination with AFM® filtration.



# 优化氯消毒和生态型维生系统

## Optimising chlorinated and biological LSS

### 什么是凝结和絮凝作用？

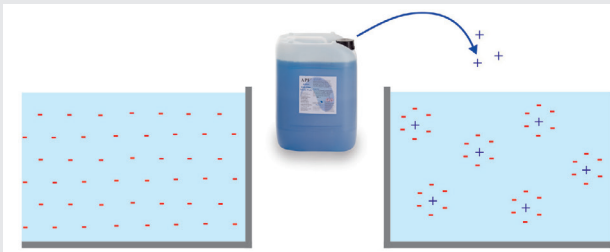
What is coagulation and flocculation?

凝结作用：凝结是一个将溶液中的分子收集起来形成胶状悬浮液的过程。为了使絮凝作用得以进行，APF®必须迅速与水充分混合，这就是我们设计ZPM的原因。如果不使用ZPM，则没有凝结作用，在有机物还留在溶液里时，APF®已经直接开始了絮凝作用。

Coagulation: is the process of dragging chemicals out of solution to form colloidal suspensions of small particles. In order to make coagulation work, APF® must be mixed instantly and aggressively with the water, this is why we designed the ZPM. If a ZPM is not used, the coagulation stage is missed, organics will remain in solution and APF® jumps to flocculation.

絮凝作用：絮凝作用是将胶装悬浮液收集起来，形成能够被AFM®去除的絮凝物的过程。APF®将正电传导到这些絮凝物，使其能够被AFM®的负电表面吸附。絮凝作用需要几分钟的时间完成，形成的絮凝分子非常脆弱，因此这时不能强烈地搅动水。

Flocculation; is the process of bringing colloidal suspensions of small particles (organic detritus, bacteria and parasites) together to form larger flocs that can be easily removed by AFM®. APF® imparts a positive charge to particles that are then attracted to the negatively charge surface of AFM®. Flocculation takes several minutes and the particle floc is very fragile, so the water must not be subjected to aggressive agitation.



### APF®的表现 Performance of APF®

AFM®滤料的过滤精度可达到5μ（在20m/hr的流速下），如配合APF®使用，过滤精度可到0.1μ。因此，如弧菌、隐孢子虫、梨型虫、分支杆菌（念珠菌、曲霉菌）等能够被清除。APF®中也含有NoPhos的成分，能够去除水中的磷酸盐。如果水中没有溶解的磷酸盐，那么细菌和藻类就不能够生长。APF®对过滤效果的改善，不仅使得维生系统更加健康安全，还能减少80%的化学氧化物的用量，从而保护环境。

AFM® filter media provides nominal filtration down to 5μ (at 20m/hr filtration velocity). When APF® is used, nominal filtration of 0.1μ is reached, so parasites such as Vibrio, Cryptosporidians, Giardia and Mycobacteria (Candida, Aspergillus) are removed from the water. APF® also contains NoPhos to remove phosphates from the water. If there are no dissolved phosphates, then bacteria and algae simply cannot grow. The improved filtration performance offered by APF® not only makes LSS safer and healthier, it can reduce chemical oxidant demand by up to 80% and help protect our environment.

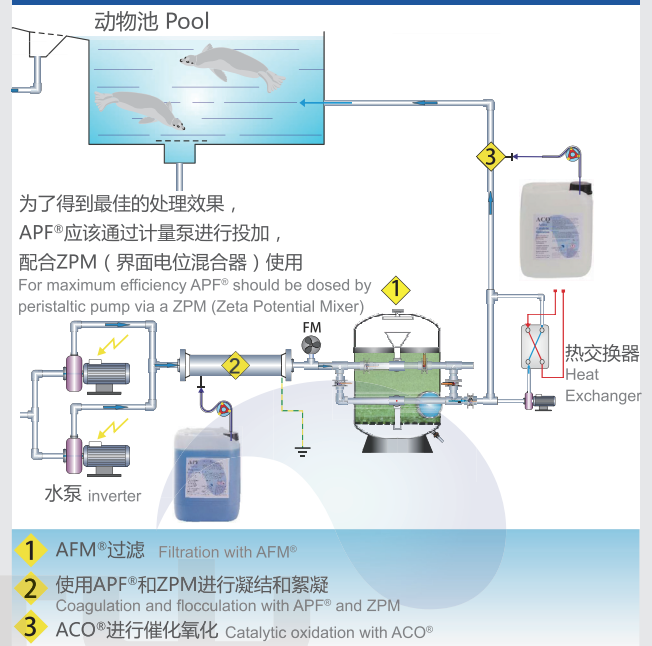
### 如何使用APF®？

How to use APF®?

APF®需要非常缓慢地投到水中。每立方米的循环水量中，需要投放0.5-1ml的APF®。因此应该使用计量泵，如Dryden Aqua投药泵等。为了得到最佳的处理效果，APF®应该配合ZPM界面电位混合器进行投加，ZPM的安装位置应该在水泵和AFM®过滤罐之间，pH应该为中性，碱度应高于30ppm。

APF® should be dosed into the water at a constant very slow flow rate. 0.5 - 1ml. of APF® is injected per m³ of water circulated through the filters. Only peristaltic pumps such as the Dryden Aqua flocculation pump should be used. For best results, APF® should be injected directly via a Dryden Aqua ZPM static mixer, located between the pumps and the AFM® filters. The pH should be neutral, alkalinity should be greater than 30ppm.

### 如何使用APF®？ How to use APF®?



### 投加量的检测和控制

Dosage Monitoring and Control.

可以用标准分光光度计中的铝检测试剂每周对铝进行分析。饮用水准则允许最大铝浓度0.2毫克/升。APF®絮凝需要每立方过滤流量中有0.05 - 0.1ml的铝浓度。

Once commissioned, dosage can be monitored by weekly Aluminium analyses using Al test reagents in a standard spectrophotometer. Drinking water guidelines allow a maximum Al concentration of 0.2mg/l. Optimal APF® flocculation requires 0.05 - 0.1ml per m³ of filtration turnover.

### Dryden Aqua公司简介

Dryden Aqua是一家苏格兰的海洋生物科技公司。始创于1980年，Dryden Aqua最初服务于水产养殖业。起初，AFM®也是专门开发用于水产养殖和水族馆使用。凭借对行业知识的独特认识与对物理化学反应的深入理解，我们开始进军其他水处理行业，并作出了突出贡献。

在发展过程中，我们对于水产养殖及海洋馆行业依然有着极大的极大的热情，这为我们致力于养护和可持续技术奠定了基础。我们的使命，是通过提高发展中国家人民的生活条件、改善世界各地的总体公共卫生并对改善生态系统提出积极的解决办法，让世界变得更美好。

We are a Scottish marine biological company founded in 1980 primarily to serve the aquaculture industry and AFM was developed specifically for aquaculture and aquarium use. Our unique knowledge combination and detailed understanding of biological as well as physio-chemical reactions has since enabled us to develop into other markets where sustainable water treatment processes can make a difference.

Our passion however remains in the aquaculture and aquarium industries which provided the foundation for our commitment to conservation and sustainable technology. Our mission is to help make the world a better place by providing solutions that save lives in developing countries, improve overall public health around the world and have a positive environmental impact on our ecosystem.