



Hydro-Pure Technology Frequently Asked Questions

English Ver.2.0.1



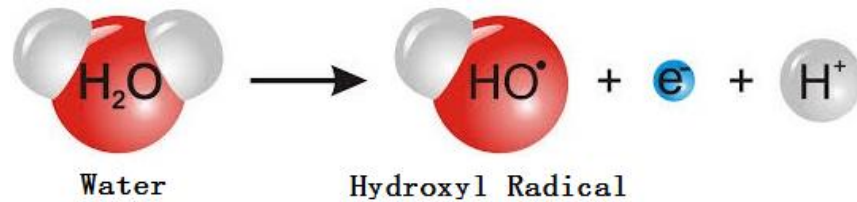
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Understanding Hydro-Pure Technology

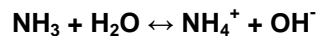
1. What is Hydro-Pure Technology?

- Hydro-Pure Technology is a patented water detoxifying and depurating technology for applications in both Marine and freshwater Aquatic Hobby. It consists of two electro-plates to energize a cartridge box containing special Cata-Pure Catalyst Media to generate strong reactive Hydroxyl ($\bullet\text{OH}$) radicals, which is the key to the detoxifying and depurating reactions process.



2. Before touching on the benefits of Hydro-Pure Technology, let us understand the toxicity difference between Ammonia and Ammonium in the aquatic water:

- Ammonia is un-ionized, and has the formula NH_3 . Ammonium is ionized, and has the formula NH_4^+ . The major factor that determines the proportion of Ammonia or Ammonium in water is the pH of the water. Unionized NH_3 is the form that can be toxic to aquatic organisms. The ionized NH_4^+ is basically harmless to aquatic organisms.
- The chemical equilibrium equation between ammonia and ammonium is:



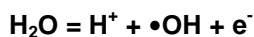
3. What are benefits of Hydro-Pure Technology?

- Hydro- Pure Technology creates safe and stable pristine “Hydro-Pure Water” similar to that of natural river stream rich in micro nutrients and minerals.
- It constantly pushes the ionization of toxic Ammonia NH_3 into non-toxic Ammonium NH_4^+ , thus greatly preventing fish kill due to toxic Ammonia. Ammonium cannot be absorbed into the fish gills.
- It also helps to oxidize toxic Nitrites NO_2^- to non-toxic Nitrates NO_3^- , keeping it stable and at a safe level.
- In the continuous usage, the Total Ammonia Nitrogen (NH_3 and NH_4^+) will eventually become free Nitrogen N_2 and water H_2O .
- Hydro-Pure Technology can also prevent cloudy water by the ionization of solid precipitation present in the waters.

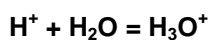
- It also removes bad smell by the oxidization of Sulphur-based products which causes smell in the water.
- Hydro-Pure Technology is suitable for marine and freshwater fish tanks of all sizes, all types of fishes, plants and live corals and all levels of stocking density. It also helps in the prevention of “New Tank Syndrome” especially in Marine tanks application. Also suitable for all applications that requires pristine water condition of safe and stable level of Ammonia, nitrites and nitrates acceptable for aquatic lifeform.

4. Working principles of Hydro-Pure Technology.

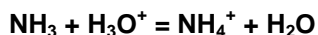
- When the electro-plates energize the Cata-Pure, it generates strong reactive Hydroxyl ($\bullet\text{OH}$) radicals from H_2O water molecules:



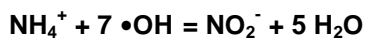
- Immediately, H^+ Hydrogen ions react with H_2O water to produce Hydronium H_3O^+ ions :



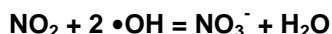
- The large amount of hydronium H_3O^+ ions reacts with the ammonia NH_3 . This is how the toxic Ammonia is detoxified to non-toxic Ammonium.



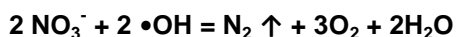
- Ammonium is then oxidized by hydroxyl radicals to produce nitrites NO_2^- :



- Nitrites are then oxidized by hydroxyl radicals to produce nitrates NO_3^- :



- Nitrates are then reduced by Hydroxyl Radicals to produce Nitrogen gas and escapes from the water :



5. How long does it take to see the full effects of Hydro-Pure Technology?

- In an aquarium with live-stocks and feeding, bio-load is a key factor. The Hydro-Pure chain reactions are taking place randomly within the Cata-pure cartridge, all at the same time. The reaction time will depend on the flow rate passing through the Cata-pure cartridge and the aquarium's bio-load. If the appropriate spec/flow rate of Hydro-Pure Technology product is used for an average bio-loaded aquarium, it normally takes 14-21

days to see the full effects. Saltwater reaction time will be faster than freshwater as it has higher pH and higher water conductivity.

6. Are the Hydroxyl Radicals produced by Hydro-Pure Technology dangerous to organism, as compared to Ozone?

- Hydroxyl Radical ($\bullet\text{OH}$) is the neutral form of Hydroxide ions (OH^-). Hydroxyl Radicals are highly reactive but short-lived, with lifetime of a few micro-seconds. Hydroxyl Radicals are generated and reacted within the Cata-pure media. Hydroxyl Radicals are very safe and do not impose any potential hazards like Ozone.

7. Will the Hydro-Pure Technology kill or react with pathogenic bacteria and beneficial bacterial?

- Floating pathogenic bacteria in water can be killed when they pass through the cartridge. However, most of the beneficial bacteria adhere to a media surface so they will not pass through the cartridge. Therefore Hydro-Pure Technology will not affect the beneficial bacterial in bio filtration system.

8. Does it mean I do not have to change the aquarium water anymore after using Hydro-Pure Technology products?

- Hydro-Pure Technology helps to maintain stable and good quality water, therefore helping to reduce the frequency of water changes. However, the user will still need to check the water quality regularly and determine if a water change is necessary.

9. With Hydro-Pure Technology, does it mean that it is not necessary to use bio media to cultivate beneficial bacteria?

- In any aquarium setup, having more filtration results in healthier water quality. It all depends on the aquarium setup and bio load. Depending on the extent of Hydro-Pure Technology usage, a reduced amount of Bio media is adequate for the aquarium.

10. Effects of Hydro-Pure Technology on fish medications and long term usage.

- It is ok to switch on Hydro-Pure Technology continuously. It will not affect the inhabitants inside the aquarium. Hydro-Pure Technology will reduce the effects of medication. When using fish medication, it is advisable (but not compulsory) to switch off the power of the Hydra stream. For Hydra Internal filter, you may remove the cartridge.

11. Can I use a bigger Hydro-Pure Technology product unit on a small volume of water?

- Yes you may do so. A bigger hydra will be more efficient and will not cause any over-reaction.

12. Can I use a smaller Hydro-Pure Technology product unit on a bigger volume of water?

- Yes you may do so, but the efficiency will be reduced on a bigger volume of water.

Cata-Pure & Electro-Plates FAQ

1. What is Cata-Pure?

- Cata-Pure is the name of the Cartridge Media use in Hydro-Pure Technology.

2. What is the usage life of the Cata-Pure?

- The Cata-Pure media can be continuously used for up to 12 months. Regular interval of washing and rinsing is necessary to remove dirt within the cartridge. Replace the cartridges after every 12 months for maximum performance.

3. Is the Cata-Pure an Activated Carbon/Charcoal?

- The Cata-Pure is a carbon based media that has been specially formulated with metallic additives to work with Hydro-Pure Technology. Replacing Cata-Pure with Activated Carbon will not work, and may even cause damage to the unit. You may perform the following test (see diagram 1) to compare Cata-Pure Media with activated carbon.

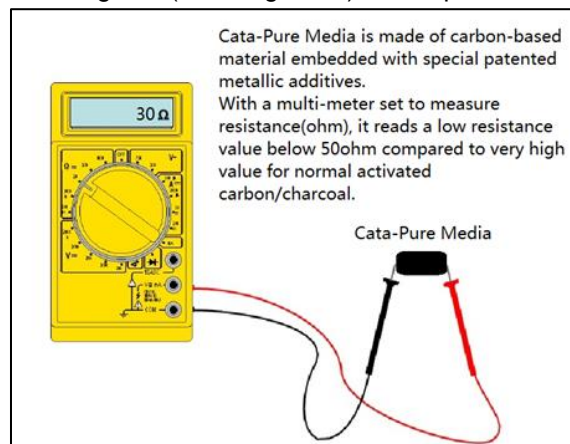


Diagram 1.

4. Will I get an electric shock if I touch the Electro-Plates?

- The Electro-Plates are powered by low level DC voltage which is safe and will not cause any electric shock. However, it is advisable that you switch off the Hydra's Power whenever you are carrying out any maintenance to it.

5. Can I modify the Hydra's electro-plates and Cata-Pure cartridges?

- No. Do not attempt to modify or use the Hydra in any other ways. Serious injury may occur if you do so. We will not be liable for any damages or injuries inflicted to the human body due to inappropriate or improper installation, set-up or use, misuse, negligence or tampering of the unit.

Hydra Internal Depurator FAQ

1. What is a Hydra Internal Depurator?

- Hydra Internal Depurator is an Internal Filter incorporated with Hydro-Pure Technology capability.

2. Which Hydra Internal Depurator should I use?

- Choose a suitable Hydra Internal Depurator base on your required Flow Rate and Tank Size from the chart below:

Model	Power	Cata-Pure	Flow Rates	Suitable tank sizes
Hydra 20	6W	1pc	400 L/H	50~100 L
Hydra 30	7.5W	1pc	600 L/H	100~200 L
Hydra 40	10W	2pcs	800 L/H	200~500 L
Hydra 50	15W	2pcs	1000 L/H	500~800 L

3. How do I use a Hydra Internal Depurator?

- Hydra Internal Depurator needs to be fully submerged into the aquarium water. It can be placed inside the main Aquarium Tank or inside a Filtration system, e.g. a Sump Tank's compartment, preferably after the mechanical filtration compartment.

4. The Hydra Internal Depurator's impeller is not functioning properly.

- Please follow the maintenance instruction to remove the impeller. Wash the impeller to remove any dirt and debris. Check the impeller shaft and rubber caps for any defects.

5. The Hydra Internal Depurator's venturi is not functioning properly.

- A venturi works by the effects of differential pressure suction created by the water flow. For the venture to work, the Hydra Internal filter's top portion must be within 1cm from the water surface. There will not be enough suction if the Hydra internal filter is placed more than 1cm below the water surface. .

Hydra Stream FAQ

1. What is a Hydra Stream?

- Hydra Stream is an in-line canister adapter build in with Hydro-Pure Technology capability. It is used as an enhancement to the main filtration system. It needs to be connected into the back end of a filtration system driven by a pump.

2. Which Hydra Stream should I use?

- Select the Hydra Stream size base on the volume of water to treat. Below is the guideline.

Model	Flow rate L/h	Optimum volume of water that can be treated (L)	Power (W)	Cata-Pure	Diameter x H (mm)
Hydra Stream 1	300-2000	60~1200	1.1W	4pcs	Ø85 x 295
Hydra Stream 2	800-3000	200~2000	1.3W	6pcs	Ø85 x 335
Hydra Stream 3	1000-5000	400~2500	1.5W	8pcs	Ø85 x 375

3. How do I use a Hydra Stream?

- Hydra Stream is an adapter unit. It is not a complete filter system. Hydra Stream should be connected to a filtration flow system, preferably at the backend, after the mechanical or bio-filtration phase. Example, at the outlet of a Canister filter. Hydra Stream can also be attached with a pump and submerged into a sump tank compartment.

4. Is Hydra Stream waterproof?

- Yes, the Hydra Stream unit is totally waterproofed and may be submerged into water.

5. Does the Hydra Stream have a fix inlet and outlet direction?

- The Hydra Stream is designed as a pass through adapter. Any flow direction is fine.

6. Placement position of Hydra Stream

- The Hydra Stream can be placed in any direction. However, if the water flow is very slow, it is recommended to place the Hydra Stream vertically upright with the water going in from the bottom and out from the top. This is to ensure water is in full contact with both the titanium electro-plates.

7. Flowrate reduction when using Hydra Stream

Water flow rate after passing through the Hydra Stream, will be reduced. This is normal and it is due to the passing through of the Cata-Pure cartridges. When connecting the Hydra Stream to

the filtration system, please take into consideration the flow rate reduction so that it does not affect the overall filtration.

Hydro-Pure Technology and It's Effect

- 1. Ammonia. Why does Ammonia Test Kit read high levels of Ammonia after using the Hydro-Pure Technology products?**
 - Do not panic. Most Ammonia Test Kits in the market measures Total Ammonia Nitrogen (TAN). They measure the total sum of toxic Ammonia (NH_3) and non-toxic Ammonium (NH_4^+) in the water. Hydro-Pure Technology detoxifies Ammonia (NH_3) by constantly pushing the ionization of toxic Ammonia NH_3 into non-toxic Ammonium NH_4^+ , thus greatly preventing fish kill due to toxic Ammonia. Therefore, it is normal that these test kit results in high readings as they measure total sum of toxic Ammonia (NH_3) and non-toxic Ammonium (NH_4^+). Research has also shown that most aquatic plants are able to take in Ammonium directly for their nitrogen requirements.
- 2. Nitrate. Why does Nitrate NO_3^- level rises slightly during the initial phase of using the Hydro-Pure Technology products?**
 - Hydroxyl radicals are more reactive to Ammonia and Nitrites and may be oxidized to become Nitrates. If the initial amount of nutrients, Ammonia NH_3 and Nitrite NO_2^- in the water is higher, they will be oxidized first, to become Nitrate NO_3^- . Therefore, there may be an initial rise of Nitrates, but it will gradually be reduced by H^+ Hydrogen ions and fall to a stable and safe level.
- 3. Phosphate. Effects of Hydro-Pure on Phosphate level in marine aquarium water.**
 - Hydro Pure Technology has no direct effects on Phosphate level in the Aquarium water.
- 4. Trace Elements. What is the effect of Hydro-Pure Technology on Trace Elements in aquarium water?**
 - Hydro-Pure Technology may ionize these trace elements, making them more accessible and available to the corals, invertebrate and fishes because ionized trace elements are more absorbable for the organisms.
- 5. Redox Potential Level. What is the effect of Hydro-Pure Technology on Redox Potential level in aquarium water?**
 - Hydro-Pure Technology is able to breakdown harmful components like Ammonia, Nitrite, Nitrate and many other nitrogenous compounds. Therefore, a higher Redox Potential may be experienced and is actually very desirable for coral culture, especially for SPS corals.

- 6. Algae. Does Hydro-Pure Technology help to remove/prevent algae in the aquarium?**
- Algae develop due to many factors such as high nutrients, high oxygen and lighting exposure, etc. Different types of Algae need different conditions to grow. Hydro-Pure Technology helps to reduce overall nutrient level, so it might help in algae problems to a certain extent, depending on the overall aquarium conditions.
- 7. Planted Tanks. Can Hydro-Pure Technology be used for Planted Tank Setup?**
- Yes. A well balance nitrogen cycled planted tank may develop algae in the first few days of using Hydra due to the fast depletion of nutrients. It is advisable to partially change about 10% of the water to prevent algae growth. Hydra will stabilize the water quality thereafter.
- 8. pH. Does Hydro-Pure Technology affect the pH of the water?**
- Generally, there is no significant effect on pH of the water. However, in cases where there is extreme bio loading (livestock, feeding) filtered with Hydro-Pure technology products only without water change, pH may fall slightly due biological imbalance as weak carbonic acid build up. In such cases, please perform partial water change.
- 9. Black Water Solution. Does Hydro-Pure Technology affect black water solution?**
- No.
- 10. Vitamins. Does Hydro-Pure Technology affect vitamins additives?**
- Vitamin effects will be slightly reduced.
- 11. Water Conditioner. Does Hydro-Pure Technology affect water conditioner?**
- No.
- 12. Protein Skimmer's Skimmate. In Marine tank application with protein skimmer, will the Skimmate be reduced when using Hydra?**
- Hydro-Pure Technology can help to break down protein and organics substances; therefore, it is normal to see less skimmate at the protein skimmer as the protein are already being broken down in advance by the Hydro-Pure reaction.
- 13. Hydra effects on Nitrate NO₃ and SPS corals in Marine Tank applications.**
- Hydroxyl radicals are very reactive and may directly convert Protein, Ammonia and Nitrites into Nitrates. In a running marine aquarium, there may be chances that existing Protein and Ammonia happens to be in higher concentration. When a Hydro-Pure Technology product is installed, the Hydroxyl radicals are more reactive with Protein and Ammonia during the initial phase. The user may experience a sudden drop in Ammonia and Nitrite, together with a sudden rise in Nitrates. Many corals, such as SPS corals are sensitive to rising Nitrates and may be harmed. Therefore, please monitor Nitrate level

when using the Hydro-Pure Technology product for the first time. Take necessary actions if Nitrate level exceeds your Corals' requirements. Nitrate will be reduced by H⁺ Hydrogen ions at a slower pace.

Recommendations: Perform a water change for existing marine aquarium before starting to run the Hydra Marine Depurator so as to reduce the initial amount of Protein and Ammonia, thus preventing sudden rise in Nitrate. Setups that have massive live rocks, bio medias and heavily loaded Corals may be able to reduce Nitrate, thus they may not experience this effect.

14. Coral Supplements. Will Hydra react with Coral supplement?

- Coral Supplements may consist of vitamins and amino acid proteins. Vitamins will be slightly reduced. Amino acids and proteins can be broken down by Hydra. You may wish to temporary switch of the Hydra when dosing coral supplements. It is also fine to leave the Hydra switched on.

15. Tank water turns cloudy after using Hydra.

- Hydra will not cause cloudy water. Cloudy water can be due to bacteria boom or debris and organic release from aquatic animals.

Maintenance FAQ

1. Do I have to clean the Cata-Pure Cartridge?

- Yes. Regular maintenance is necessary to ensure that the Cata-Pure Cartridge does not get clogged with dirt. Rinse the Cata-Pure with clean water whenever you are cleaning the filtration.

2. How do I clean and perform maintenance of Hydro-Pure Technology products?

- Remove the Cata-Pure cartridge out of the Hydro-Pure Technology product. Rinse and shake the cartridge in water to release dirt. Clean the cartridge exterior. Clean the Electro-Plates surface. Re-insert the Cartridge into the product.

3. How often do I need to clean the Hydro-Pure Technology product?

- A reduction in flow rate indicates a clogged system. Please inspect and clean the product on a regular basis.

4. Are the Electro-Plates replaceable?

- The electro-plates are made of titanium and they do not need to be replaced throughout the entire operating life of the product. Regular cleaning is recommended for optimum performance.

5. Why does one of the electro-plate's surface turns brownish?

- It is normal that one of the electro-plate's surface will becomes brownish, due to the chemical reaction deposits. Please clean the electro-plate's surface during maintenance.

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For the latest version FAQ, refer to www.yihufish.com >
Product Information > OF Hydra > FAQ.