

FEDERATION OF BRITISH AQUATIC SOCIETIES

AQUARIUM MANAGEMENT CARE SHEET No: 2 Water Chemistry

01/01/98

Water is not the same the world over. Whilst we attempt to keep 'community collections' of fish in one type of water we should also appreciate that not all fish require the same water conditions as these may vary from locality to locality.

WATER QUALITIES : These are usually centred around a few major component values, although it is possible to test water for the most minor components if so desired.
Those of most importance (or concern!) to aquarists are the following:

pH: Degree of acidity or alkalinity. Measured from 0pH (extreme acid) to 14pH (extreme alkaline)
Tapwater - between 7.2 - 8 (hard water areas) and 7 (soft water areas)
Rainwater – generally 7 or below (depending on prevailing air pollution at the time)
Saltwater (natural seawater or synthetic mixed) 8.3

HARDNESS (DH°): 0 - 3° (soft water) 8-10° (medium hard) 16° plus (very hard)
Often hardness is expressed as 'parts per million' (ppm).

0 - 75 ppm is approx 0 to 4 deg DH 75 - 150 ppm is approx 4 - 8 deg DH
150 - 300 ppm is 8 to 16 deg DH 300 plus is More than 16 deg DH.

Sometimes, fish from soft waters need to be 'changed over' to harder water for convenience of keeping. This can be achieved quite naturally with little stress to the fish.

Simply set up an aquarium with ordinary gravel substrate and fill with soft water, as required by the fish. Over the next few weeks, the water in the tank will gradually harden due to the effect of the (probably) calcareous substrate. In the meantime, make sure that partial water changes are made using the hard water to which you wish to acclimatise the fish.

Eventually, the fish will find themselves living quite happily in much harder water as will any offspring from spawnings who will be used to hard water immediately - without any re-acclimatisation being necessary.

SPECIFIC GRAVITY (marines only): This is a comparison of density between sea water and pure water. Some public aquariums run at lower than normal 1.024 value so as to control parasitic attacks. Usual marine aquarium range - 1.020 - 1.024 at 24°C.

AMMONIA and NITRITE: These compounds are toxic to fish and are formed as a result of decaying or decomposing materials (faecal waste, uneaten food, dead plants etc) and are responsible for 'New Tank Syndrome' fish losses. Can be reduced by nitrifying bacteria in biological filters. Once biological filter has matured, readings should be 'zero'.

NITRATE: Less toxic to fish and often utilised by plants as food. Test readings will gradually rise due to production by nitrifying bacteria. Keep in check by regular partial water changes.

PHOSPHATE: Another 'ingredient' of tapwater which, with nitrate, encourages algae growth.
Can be removed with RowaPhos^(tm)

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CHLORINE/CHLORAMINE: These are added to the domestic water supplies to safeguard human health – not fishes'! Chlorine is usually dissipated by vigorous aeration or even simply the process of filling the tank. Chloramine is best reduced or eradicated by means of proprietary additives.

R O Water: Of specific interest to marine fishkeepers, R O Water is water that has been passed through a Reverse Osmosis unit to remove all heavy metals and contaminants before being used to mix with synthetic sea salt.

Similar to distilled water, R O Water is 'lifeless' although when purchased from an aquatic dealer the option is usually offered to add some trace elements at the point of sale. In freshwater aquariums it is usual to mix some ordinary water with R O Water.

WATER CARE

Attention to water quality is the secret of success in fishkeeping. Good water management can only be obtained by using filtration coupled with regular partial water changes.

Do not subject your fish to any sudden change in water quality or temperature: this will induce stress which, in turn may affect the fish's immune system and so render it open to attack from disease.

It is vital that when moving fish to another location (moving house or even to Fish Shows) you take as much of their normal aquarium water with you so as to make the transfer as stress-free as possible. See **Transporting and Exhibiting Fish, Aquarium Management Care Sheet No: 9**

Remember that anything (and everything) that is put into the aquarium will affect the water condition to some degree. Keep soluble rocks and those containing metallic ores out of the aquarium; similarly, innocent-looking aquarium ornaments can also have an effect on the water condition.

When mixing salt water for marine fishes, use 'food quality' plastic containers – and make sure their use is conscientiously restricted for aquarium purposes.