

## Ammonia Test Kit

### Ammonia the implications ?

In a normal pond environment Ammonia is created as a natural by-product of all fish. Koi are known as the “aquatic pigs” and produce copious amounts of waste in the form of faeces discharge and through normal respiratory activity known as the Osmosis process. These normal bodily functions breakdown into Ammonia and is deadly to all fish. Koi particularly have a low tolerance level for Ammonia. And even a short term exposure for only one week at high levels can cause irreparable damage or death. Ammonia causes a number of harmful effects, burning and erosion of gills destruction of protective mucous layers, a condition known as hyperplasia, which reduces oxygen flow effecting the haemoglobin of the blood. At non fatal ( sub lethal) low levels persistent exposure will cause a large reduction in the ability of fish to fight disease infection and is the most common cause in Koi for ulcerations, external bleeding, diseases etc. an underlying presence of Ammonia will also severely impair the regeneration of new skin tissue. No amount of treatment, medications etc, will prove effective if Ammonia at even sub lethal levels are present. The toxicity of Ammonia cannot be under estimated or over stated! The only good reading is no reading!

### Ammonia temperature pH relationship

Ammonia exists in 2 forms as Ammonium  $NH_4^-$  which is relatively non toxic and in its free form Ammonia  $NH_3$ . pH has a profound effect on free Ammonia. As pH level increases along with temperature, the toxicity of free Ammonia increases. A pH level of 8.5 with a temperature of 25c is in fact 15% more toxic than a pH level of 7.2. Water holds 5 times more free Ammonia at 25c than at 5c. This is a large increase in relative toxicity for especially for Koi, Therefore always be aware of the pH level and temperature when testing for Ammonia.

#### *pH- Ammonia - Temperature relationship*

<i>pH</i>	<i>Temp 10C</i>	<i>Temp 15C</i>	<i>Temp 20C</i>	<i>Temp 25C</i>
7.5	1.1	1.3	1.5	1.7
8.0	3.6	4.1	4.7	5.4
8.5	11.1	12.3	13.7	15.3

It can be seen as pH & temperature increases the level of toxicity of Ammonia increases ( all figures are a % increase) the % increase may seem small but can be very detrimental especially for Koi.

### Keeping Ammonia under control

Feeding fish is the biggest natural pollutant we add to the water. As mentioned waste is broken down into Ammonia. The most common causes for persistent levels of Ammonia are overfeeding, overstocking, undersize filtration, dirty filters causing poor bacterial activity, overmedicating etc. Ammonia is not at a constant level in the pond, even on a daily basis, If the bacteria in the water and in the biological stage of the filter is adequate, then levels of Ammonia that tend to rise during the day because of feeding, will return to the low levels in the morning. So test in the morning before feeding to detect the lowest available level. High readings of 0.25mg/l and above, must investigated and corrected. Levels above this value will rarely fall overnight and is a sure indication of an underlying problem.

### Lowering high levels of Ammonia

The first thing to do is save the lives of your fish quickly, Stop feeding, do daily dechlorinated water changes of 20% and add filter bacteria such as Kusuri Filter starter / booster. or Bacta-pur® Klear. Until levels are “0” then investigate why? There are many reasons why Ammonia has gone over safe levels and the most common reasons are mentioned above. for specialist advice on resolving water quality problems telephone: Kusuri Products on 01626 836600

#### How to use this Ammonia test kit

*(Read thoroughly before testing)*

1. Rinse test tube with pond water.
2. Fill the test tube with 10 ml of pond water using the syringe supplied
3. Add one Ammonia No 1 tablet & one Ammonia No 2 tablet, crush and mix to dissolve.
4. Stand for ten minutes, If test water temperature is below 10c (50f). Stand for 5 minutes if test water temperature is above 10c (50F)
5. Determine the reading by matching the colour of reacted sample with the colour card supplied. For best results put test tube behind the clear centre section of the colour test card and offer up to natural daylight. TIP: A plain white back ground, similar to this instruction sheet offered behind the test tube & colour strip may help enhance the colour match reading. The reading shows the concentration of Ammonia nitrogen. To convert the reading to Ammonia ( $NH_3$ ) multiply the reading by a factor of 1.2

#### **YOUR TEST RESULTS**

(Colours on this paper chart are not colour matched and are for guidance only)

**Forget all green colours on this scale! Green = Ammonia the aim is always to get a yellow colour result**

Critical : fatal level immediate Action required



Dangerous: fatal level, immediate action still required



Dangerous, level fatal if maintained for all fish



Caution, level too high health Issues inevitable.



unacceptable, long term health Problems are typical



Safe, In the short term, too high for constant exposure for Koi



Ideal, The only recommended Level for all pond fish



Ammonia mg/l N

1.5



1.0



0.75



0.5



0.25



0.15



0.0

