

INTRODUCTION

Effective anaesthetisation of aquatic animals is dependant upon the anaesthetic agent being rapidly and evenly dispersed throughout the water column. AQUI-S® has been especially formulated to achieve uniform mixing of the anaesthetic agent in the water with the formation of a very fine emulsion. Rapid and uniform mixing of AQUI-S® within the water column can be best achieved by making a stock solution from the concentrated AQUI-S® solution. The stock solution is then added to the anaesthetic bath forming the anaesthetic working solution.

DEFINITIONS

- ➔ Concentrate: AQUI-S® as supplied by the manufacturer (Figure 1).
- ➔ Stock solution: AQUI-S® concentrate diluted in water at a ratio of 1:10 (Figure 2).
- ➔ Working solution: Where a stock solution is mixed into a treatment tank to produce an anaesthetic bath.

NOTES

- ❑ Specific gravity of AQUI-S® is 1.089
- ❑ Parts per million can be mg/L or mL/m³
- ❑ To convert from mL/m³ to mg/L, multiply by 1.089

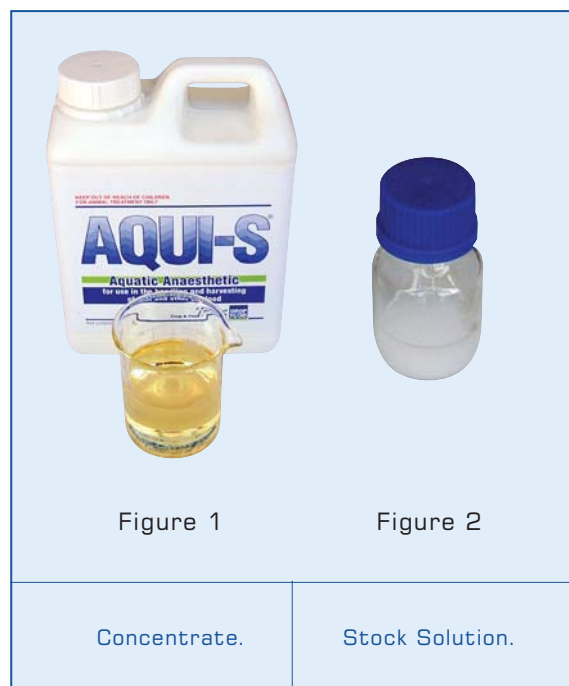
1 : PREPARATION OF THE STOCK SOLUTION

The stock solution should be composed of 1 part AQUI-S® concentrate to 10 parts water and mixing is achieved by vigorous shaking. Do not use vortex mixers as this action is not suitable for forming a uniform emulsion.

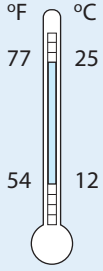


The AQUI-S® stock solution has a dense milky appearance. Poor preparation of the stock solution can result in incomplete mixing of the AQUI-S® concentrate which can form a film of AQUI-S® on the sides of the container.

2 : PREPARATION OF THE WORKING SOLUTION


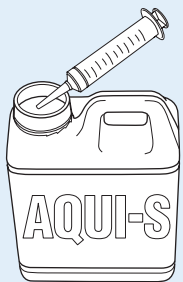


A stock solution of AQUI-S® should be formulated from the concentrated AQUI-S®. The stock solution is then used to prepare the working solution.




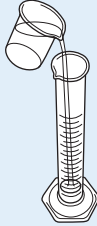
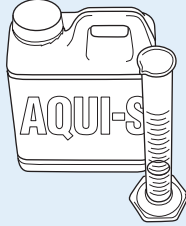
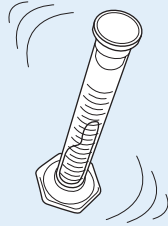
1 : 1 PREPARING STOCK SOLUTION - WATER QUALITY

 <p>TEMPERATURE</p>	 <p>SALINITY</p>	 <p>STORAGE</p>
<p>Water used to make AQUI-S® stock solutions must be between 12°C and 25°C.</p>	<p>Fresh water or salt water may be used to make AQUI-S® stock solutions. Fresh water is best.</p>	<p>Do not store AQUI-S® stock solutions for more than 6 hours. Shake vigorously before each use.</p>

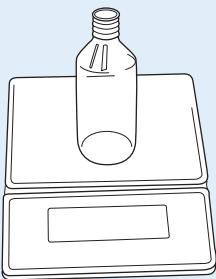

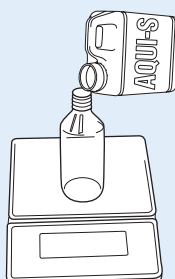

1 : 2 PREPARING STOCK SOLUTION BY VOLUME - TRANSPORT APPLICATIONS

 <p>STEP 1</p>	 <p>STEP 2</p>	 <p>STEP 3</p>	 <p>STEP 4</p>
<p>Calculate amount of AQUI-S® required.</p> <p>For Example;</p> <ul style="list-style-type: none"> <input type="checkbox"/> Determine concentration required: e.g. 5 ppm = 5 mL/m³ <input type="checkbox"/> Determine volume of water in bath: e.g. 100 L = 0.1 m³ <input type="checkbox"/> Calculate volume of AQUI-S® for the desired concentration: e.g. 5 x 0.1 = 0.5 mL 	<p>Take small syringe and measure 0.5 mL AQUI-S®.</p>	<p>Add to 5 mL of water and shake well.</p>	<p>Calculate actual concentration: 5 x 1.089 = 5.4 ppm as mg/L.</p>

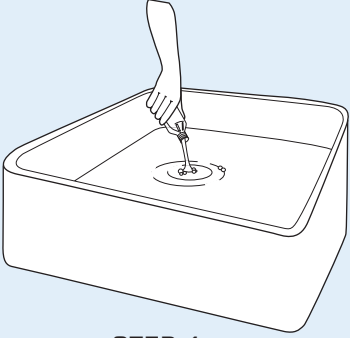
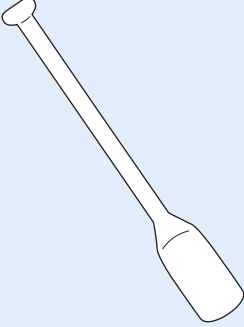
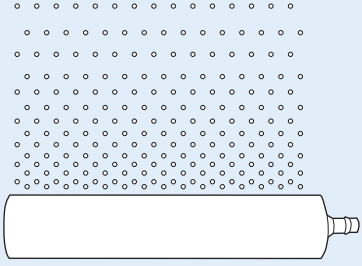
1 : 3 PREPARING STOCK SOLUTION BY VOLUME - COMMERCIAL APPLICATIONS

			
STEP 1	STEP 2	STEP 3	STEP 4
<p>Calculate amount of AQUI-S® required: For Example;</p> <ul style="list-style-type: none"> <input type="checkbox"/> Determine concentration required: e.g. 17 ppm = 17 mL/m³ <input type="checkbox"/> Determine volume of water in bath: e.g. 10m³ <input type="checkbox"/> Calculate volume of AQUI-S® for the desired concentration: e.g. 17 x 10 = 170 mL 	<p>Take measuring cylinder and add a small amount of water.</p>	<p>Measure in AQUI-S® i.e. 170 mL and add water to give a 1:10 dilution i.e. 1700 mL.</p>	<p>Cover and shake well.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Calculate actual concentration: 17 x 1.089 = 18.5 ppm as mg/L

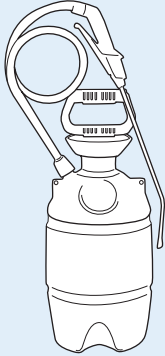
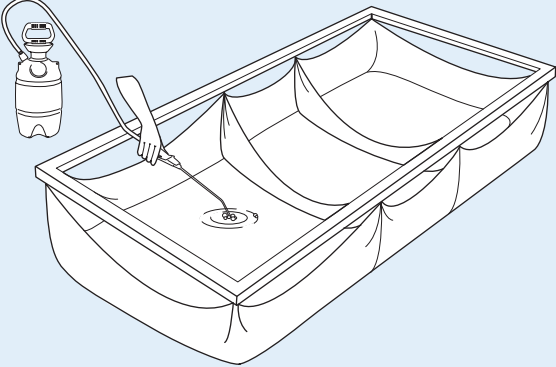
1 : 4 PREPARING STOCK SOLUTION BY WEIGHT - LABORATORY APPLICATIONS

			
STEP 1	STEP 2	STEP 3	STEP 4
<p>Use balance and glass or plastic container.</p> <p>For Example;</p> <ul style="list-style-type: none"> <input type="checkbox"/> Determine concentration required: e.g. 30 ppm = 30 mg/L <input type="checkbox"/> Determine volume of water in bath: e.g. 50 L = 0.05 m³ <input type="checkbox"/> Calculate weight of AQUI-S® for the desired concentration: e.g. 30 x 0.05 = 1.5 g 	<p>Add small volume of water to container and tare the balance.</p>	<p>Weigh required amount of AQUI-S® into the container (e.g. 1.5 g).</p>	<p>Add more water to obtain a 1:10 dilution (i.e. 1.5 g AQUI-S® requires 15 mLs of water added), replace cap and shake well.</p>

2 : 1 PREPARATION OF THE WORKING SOLUTION - SMALL VOLUMES

 <p>STEP 1</p>	 <p>STEP 2</p>	 <p>STEP 3</p>
<p>Turn off auxillary aeration. Pour stock solution into anaesthetic bath.</p>	<p>Use air diffuser or paddle to gently disperse the stock solution evenly into the anaesthetic bath.</p>	<p>Restore auxillary aeration. Continue to supply gentle aeration during anaesthetic process.</p>

2 : 2 PREPARATION OF THE WORKING SOLUTION - COMMERCIAL VOLUMES

 <p>STEP 1</p>	 <p>STEP 2</p>
<p>Mix stock solution in pressurised hand sprayer with wand type spray applicator (e.g. garden sprayer).</p>	<p>Apply stock solution with wand well below the surface of the water. Ensure that the anaesthetic is dispersed throughout the bath.</p>
<p>NOTE</p> <p>It may not be necessary to stop the aeration during the addition of the anaesthetic when dealing with large volume anaesthetic baths.</p>	