

LIVE TRANSPORTATION

The transportation of live fish causes extensive stress which often results in mortalities or severely weakened fish. Sedating fish with AQUI-S® prior to and during transport will reduce their metabolic rate and mitigate the stress response. The result is a reduction in the metabolic activity of the fish leading to lower oxygen demand and reduced waste production, which in turn maintains a non-toxic transport environment for a longer period of time. The overall result is improved survivability and stronger fish.

The ideal level of sedation for fish transport will result in a loss of reaction to external disturbances, but fish must also be able to maintain equilibrium. If fish are too heavily sedated, they will lose equilibrium and cease swimming. They may also become unable to operculate, thus disrupting the oxygen supply to the gills and causing the fish to die from suffocation.

PROCEDURE

Test the proposed treatment conditions on a small number of fish to determine the optimum concentration of AQUI-S® for your requirements. The final conditions may vary from those proposed below depending on the species, the condition of the fish, the duration of travel and the travelling conditions. We recommend that you conduct a number of bench tests prior to the introduction of AQUI-S® into your everyday operation. It is important to make up the AQUI-S® stock solution prior to the addition of the sedative to the treatment water. See the Technical Note on the preparation of Stock Solution for information on preparation.

1. Conduct a preliminary dose response trial by testing a variety of AQUI-S® concentrations between 2 and 10 ppm on a small number of fish. It has been our experience that concentrations near to 10 ppm are suitable for short duration transport events. However for longer transport events (up to 40 hours) a lower concentration is desirable.
 - a. Remove a small number of fish from the main population and place in 10 L of clean water.
 - b. Add the required amount of AQUI-S® stock solution to achieve the desired concentration.
 - c. Continually observe the fish over a period of at least 10 hours.
 - d. Check the dissolved oxygen (DO) levels in the water throughout the duration of the trial. If DO levels fall below 80% of the acclimated level, aerate the water.
2. Conduct a transportation bench trial following the guidelines outlined below. AQUI-S® treated fish should be packed in exactly the same way as would be used during a normal transportation event. Open boxes after the usual transportation time. Observe fish for mortality and strength. Place fish in clean water to revive. Record the recovery period.
 - a. Use between 5 and 10 ppm (5 to 10 mL AQUI-S® per 1000 L of water) for handling fish prior to packing for shipment. The exact concentration will be determined from the dose response studies. Animals should lose some equilibrium but still be capable of retaining their swimming motion. On handling no struggling should be apparent, although the animals will display some awareness if removed from the water.
 - b. Use between 1 and 5 ppm (1 to 5 mL AQUI-S® per 1000 L of water) during transport to keep the fish under mild sedation. The exact concentration will be determined from the preliminary dose response trials. Fish should experience a slight loss of equilibrium and awareness, but still be able to maintain their swimming motion.
3. From the bench trial determine the optimum dosage for your species and conditions.
4. Always maintain the dissolved oxygen levels in the treatment and transport water between 80% and 100% saturation.
5. Fish should only be sedated to a level such that they recover in a short time when placed in clean water after transportation

ENCLOSED FISH TRANSPORT

Where small quantities of fish are transported, enclosed transport systems are often employed. Because air transport is frequently used, this system is restricted by weight and the necessity to prevent any leakage from the transport.

SEMI-ENCLOSED FISH TRANSPORT

A semi-enclosed transport is generally applied to situations where large fish or large quantities of fish are being transported. In general, rigid containers over 1 cubic metre in volume are used.