# Fisheries Transport Systems

## AQS325

**9. Week**

Carry alive fish with oxygen

| Weeks | Topics |
|---|---|
| 1. Week | Carry fish by iced water |
| 2. Week | Carrying the fishes by cooled sea water |
| 3. Week | Carry fishes with ice |
| 4. Week | Carry by cooled store |
| 5. Week | Carry by freezing |
| 6. Week | Carry by salt |
| 7. Week | Fish transport: rules |
| 8. Week | Carry alive fish |
| 9. Week | Carry alive fish with oxygen |
| 10. Week | Carry alive crustacean |
| 11. Week | Carry alive larvae |
| 12. Week | Carrying equipment |
| 13. Week | Carry by frigorific track |
| 14. Week | Carry fishes long distance |

Use of Liquid Oxygen for the Transportation of Live Catfish

The Oxygen is stored as a liquid in a dewar (tank) which may hold 4,500 cubic feet of oxygen and weigh close to 800 lbs. The liquid oxygen converts to a gas once it is injected into the transport water via air-stones or diffusion hoses. Regulators and flow meters are used to distribute and monitor the flow of liquid oxygen to the transport tanks.

Forrest Wynne / KSU State Extension Specialist for Aquaculture

https://aquaculture.ca.uky.edu/sites/aquaculture.ca.uky.edu/files/use-of-liquid-oxygen-for-the-transportation-of-live-catfish.pdf

Use of Liquid Oxygen for the Transportation of Live Catfish

Liquid oxygen allows the transport of 3 to 4, or more pounds of food size catfish per gallon of hauling water. Live haul tank loading rates depend on many factors such as the duration of time the fish spend in the tanks, the size and condition of the fish, water temperature and chemistry, and the outside air temperature. Depending on the weight and number of the catfish transported, the volume of the fish may take up to one third to one half of the total volume of the tank.

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Use of Liquid Oxygen for the Transportation of Live Catfish

A medium size fish transport truck using liquid oxygen can carry 6,000 to 12,000 lbs of market size catfish for 6 to 8 hours. Fish hauling trucks may range from a $\frac{3}{4}$ ton pick up truck which can transport 100 gallons of water weighing 834 lbs to a tractor trailer that can haul 5,000 gallons weighing 41,700 lbs.

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PURE OXYGEN AND LIVE FISH TRANSPORT

Kentucky Fish Farming, 3(2).

William A. Wurts, Senior State Specialist for Aquaculture

Kentucky State University Cooperative Extension Program

P.O. Box 469, Princeton, KY 42445

www.ca.uky.edu/wkrec/Wurtspage.htm

Electric agitators or air blowers are commonly used to enhance carbon dioxide removal and aerate live fish transport tanks. While these devices are practical and readily available, they can have some disadvantages: high initial investment, possible equipment or power failure, and may cause water temperature to rise more rapidly during transport. Recently, the use of pure oxygen gas for fish transport has become more commonplace. There are several advantages with this method: equipment can be leased; there is little chance of equipment failure; it may reduce water temperature slightly; water turbulence is limited; and loading rates can be increased by 25%.

http://www2.ca.uky.edu/wkrec/OXYTRANS.htm

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Pure oxygen flow rates used for live transport generally range from 3-6 liters/minute of oxygen gas for each 100 gallons of fish transport water. Actual flow rates will vary from load to load and must be adjusted accordingly. Oxygen is introduced into the water as very fine bubbles through porous materials such as air stones or diffuser hose. Certain types of irrigation hose work well for oxygen diffusion. Dissolved oxygen levels are dependent on bubble size; smaller bubbles produce higher levels. Because water agitation is minimal with pure oxygen injection, carbon dioxide tends to accumulate; reducing oxygen availability to fish during long trips if water is not exchanged. If accumulation is slow and oxygen levels are adequate, channel catfish will tolerate 20-30 mg/l of carbon dioxide.

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Oxygen concentrations can be adjusted up or down by increasing or decreasing gas flow rates with a regulator valve/gauge and a flow meter. Oxygen levels below the minimum recommendation may stress or suffocate fish. Levels above the maximum recommendation could cause gas bubble disease or tissue damage. Standard catfish loading rate recommendations are made for transport water at 65o F. Loading rates must be reduced approximately 25% for every 10o increase above 65o F. Using pure oxygen gas and by carefully monitoring DO, standard loading recommendations may be increased by 25%.

http://www2.ca.uky.edu/wkrec/OXYTRANS.htm

# References


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