
Copper Alloys in Marine Aquaculture



Copper Nets Expand Fish Farming Productivity

The demand for protein, especially meat and fish, continues to grow with the expanding global population. The \$43 billion marine aquaculture industry produces 21 million tonnes of seafood products annually. Aquaculture is the only means to meet the projected growth in fish consumption of approximately 40 million tonnes per year by 2030.

Because farmed fish do not expend energy opposing gravity or controlling body temperature, they convert feed into edible meat more efficiently than farmed land animals. Fish farming in copper alloy nets further increases food conversion efficiency and fish health.

Due to their corrosion resistance and mechanical properties, copper alloys are ideal materials for both surface and submersible marine aquaculture enclosures for near- and off-shore sites.

Sustaining Marine Aquaculture

The use of copper alloy mesh in fish farming originated in 1975 in the Northeastern US with small salmon farming enclosures. Today, copper alloy mesh is successfully used in Japan, Australia and Chile, and global use continues to expand. Development activities and trials of improved copper alloy materials, mesh forms and aquaculture system configurations are underway in China, Greece, Korea, Panama, South Africa, Scotland, Turkey and the US.

Providing a Safe, Sanitary Environment

Copper alloy mesh is the only net material that addresses all key challenges facing fish farmers:

- Reduces predator attacks and fish escapes
- Improves water flow through net, providing higher oxygen levels
- Promotes better fish health and improved Feed Conversion Rate (FCR) (50% of operating cost)
- Provides a sustainable, sanitary production system with low environmental impact

Delivering Benefits for Fish Farmers

- Over three years in Australia, farmers reported a 15% reduction in feeding costs; a decrease in fish mortality from 20% to 10%; and a reduction in losses due to predator attack, from 5% to < 0.1%.
- Fish farmers in Chile are realizing similar benefits to those in Australia as a result of improved sanitary conditions in net pens.
- In China, the replacement of conventional nets with copper nets provides significant benefits for regional fish farmers.

To learn more about the benefits of copper and copper alloys in aquaculture, visit www.copperalliance.org.
