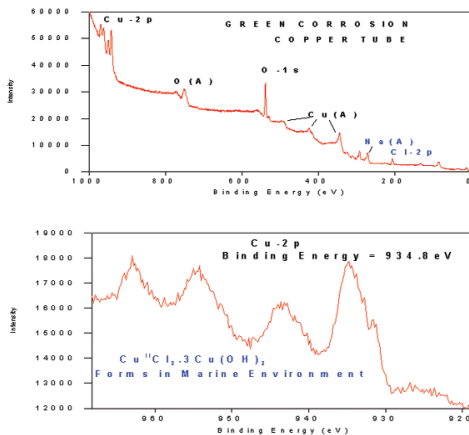


Protecting your valuable export sales.



X-Ray Photoelectron Spectroscopy (XPS)

Surface analysis by X-Ray Photoelectron Spectroscopy (XPS) is accomplished by irradiating a sample with X-Ray photons and analysing the energy of the emitted electrons. The key components of an XPS machine are a high vacuum chamber, X-Ray source, X-Ray monochromator, ion gun and energy analyser.

XPS is widely used to determine the chemical composition and to characterise the chemical state of the surface of materials. XPS can be used for all materials that can be subjected to an ultra-high vacuum.

Crane Copper Tube recently won a large export order to supply copper tubes, into South East Asia. Because the sailing interval was relatively short, the first batch of copper tubing was packed in an open topped shipping container. However, when it had arrived at its Asian destination, discoloration had developed.

With one shipment having a value of over \$100,000 and the potential threat to millions of dollars of export orders, Crane needed to quickly ascertain if the discoloration was due to environmental damage that had occurred in transit, or if it was due to some contamination in the production process.

To achieve a definitive result, samples were sent to Future Materials' facility at the University of Queensland and were subjected to X-Ray Photoelectron Spectroscopy (XPS).

This process determined very quickly that the discoloration was a corrosive product of the copper, oxygen and chlorine.

Copper oxychlorides form in a marine environment, and detailed examination of the subsequent analysis indicated the presence of sodium and chlorine.

By confirming that the discoloration was caused by the marine climate the customer had the confidence in the quality of the manufactured product.

Now, Crane's offshore shipments of copper tubing are packed inside a plastic liner which in turn is shipped inside a fully enclosed container.

"Future Materials is our independent authority on material related issues and because of their expertise, we know that our samples will be analyzed with due care. We have confidence in the outcomes."