



Counterfeit alcohol is becoming a growing concern around the globe, demanding more rapid, reliable, and economically feasible authentication methods. Image Source: Flickr user quijonido

One night, Blake Stone-Banks ordered a bottle of whiskey with a friend in a popular Beijing bar. “It tasted funny so we limited ourselves to one glass each,” he says.¹ Hours later his friend’s wife called to inform him that his friend had collapsed and was in the hospital, unable to speak. Stone-Banks immediately thought of the strange whiskey, which he now believes was counterfeit, part of China’s growing illegal and unregulated black market.

Counterfeit products are nothing new; from luxury handbags to high-end watches, fake versions of popular consumer goods are flourishing and often deliberately sought out by customers who want the look of premium products without the high price tag. Counterfeit alcohol, however, is a different story; few consumers are looking for a fake bottle of scotch and the overwhelming majority of buyers are entirely unaware that they are purchasing a fake and potentially dangerous product. And, yet, the black market alcohol industry is booming, as scammers try to capitalize on growing demand for alcoholic drinks. In China, where per capita alcohol consumption has risen by over 31% in just two years, experts now estimate that 30% of all alcohol is fake. In Russia, where counterfeit alcohol has caused a spate of deaths in recent years, the number may be as high as 50%.²

But the problem isn’t just confined to other countries; in the United States, the rising popularity of premium liquors has spurred a surge in fake alcohol sales and law enforcement agents have found widespread counterfeiting even in popular bars and restaurants one wouldn’t typically associate with criminal activity.³ In one New Jersey restaurant, for example, investigators recently found a mixture of rubbing alcohol and caramel coloring being sold as scotch while a sting operation in Texas revealed that nearly a third of licensed retailers were selling substituted liquor.



The UK has created new policies for identifying counterfeit alcohol, as illicit products are increasingly entering the mainstream marketplace on both the high and low ends of the spectrum.

Image Source: Unsplash user Tom Sodoge

The Types and Dangers of Counterfeit Alcohol

Alcohol counterfeiting can take one of two forms. In substitution scenarios, cheaper legal products are re-packaged and sold as more expensive alcohol types or brands, diverting profits away from legitimate producers, deceiving consumers, and compromising the reputations of suppliers. In some cases, this is simply a matter of pouring a \$13 bottle of scotch into a \$150 single malt bottle. In other cases, multiple types of liquors and color additives are blended in an attempt to mimic premium products and passed off as the real deal. As Jake Emen points out in an article for Eater, “There are even super-premium knockoffs, which sometimes hit the auction market with price tags in the thousands of dollars, causing headaches for collectors and rare whisky hunters.”⁴

In more nefarious corners of the black market, counterfeits are comprised of illegally produced and unregulated alcohols, often containing dangerous chemicals that can cause serious damage. Charlie, a bartender in China has seen the effects of these black market products firsthand. “It’s a nightmare, an absolute nightmare,” he tells the *National Review*. “The fake booze hurts. If you poured it in your car, it would probably work. But it’s a roaring trade. It’s [inexpensive] and people are cheap.”⁵ Dr. Bernhard Schwartländer of the World Health Organization says, “Where counterfeit alcohol is made from poor quality ingredients or toxic industrial chemicals, consuming it could lead to serious acute illness or worse in the short term, and potentially a host of medium- and longer-term health problems.” Of particular concern is the inclusion of methanol, a common ingredient in counterfeit alcoholic beverages that can cause blindness, seizures, kidney failure, and death. While counterfeit alcohols containing methanol primarily affect markets in the developing world, the increasingly complex nature of supply chains is paving the way for these products to make their way into Western countries.



Counterfeit versions of super-premium whiskeys have been found on the auction block, demanding prices in the thousands.

Image Source: Flickr user Roman Boed

A Spectrophotometric Method for Counterfeit Detection

As the counterfeit alcohol market continues to expand, so too does the need for reliable and rapid counterfeit detection technologies. “The [alcohol] industry has tools at its disposal for telling authentic and counterfeit brands apart but many of them involve lab-based analysis, which isn’t always the most convenient system if a sample needs to be identified quickly,” says chemistry professor David Littlejohn, “There’s a growing need for methods that can provide simpler and faster identification.”⁶ To create such methods, researchers are increasingly looking toward UV-Vis spectrophotometry as an economical and flexible alternative to more costly and restrictive technologies.

Researchers have discovered that types and brands of alcoholic beverages have unique spectral qualities, which act as fingerprints that can be used to identify particular products and screen for contaminants. Today’s [versatile UV-Vis spectrophotometers](#) are capable of quickly identifying spectral fingerprints, giving operators the information they need to authenticate products by comparing them to an established spectral database. A new generation of lightweight, portable spectrophotometers means that testing is not confined to traditional laboratory environments, but can be performed in the field and in mobile labs. Additionally, the extraordinary sensitivity and user-friendly design of these modern instruments allows for accurate testing of even small, undiluted samples with ease and expediency. As Dr. Gary Spedding notes:

This method has been proven reliable, fast, and economical and economical for our testing of various beverages on a daily basis and should prove useful for quality consistency testing requiring little operator effort in the modern production environment. [R]esults will impact quality, safety, the collection of taxes and a reduction in economic losses to the industry through detection of fake and adulterated products in the marketplace.⁷

Multiple studies found that UV-Vis spectrophotometry can distinguish between even closely related types of alcohols with great accuracy. Furthermore, the ease of spectrophotometric analysis means that testing operations can be deployed without the need for highly skilled workers, facilitating the implementation authentication protocols and expanding the possibilities of widespread testing.

HunterLab Spectrophotometry

HunterLab has been a pioneer in the field of spectrophotometry for over 60 years. As spectrophotometric methods of counterfeit detection continue to evolve, our technologies can play a vital role in safeguarding the health of consumers and protecting the profitability and integrity of alcohol brands as well as suppliers. We offer a comprehensive range of spectrophotometric instruments includes tools for both laboratory settings and field work, allowing our customers to obtain accurate, reliable testing results wherever they may be. Unlike most handheld instruments, [our portable UV-Vis spectrophotometers](#) are ergonomically designed to allow for one-touch operation and integrate [dual beam technology](#) for the highest level of accuracy, reliability, and flexibility. [Contact us](#) for more information about our innovative products, customizable software packages, and top-of-the-line customer support services.

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