

# End of the Spectrum

## Reading the Message in the Bottle

Handheld spectrophotometer is the latest weapon used in the ongoing battle between the spirits industry and costly counterfeit products

**T**hanks to the portable UV spectrophotometer developed by Spectroscopic & Analytical Developments Ltd. (sAd; West Yorkshire, UK), a two-and-a-half year old British company that specializes in the design and manufacture of nonstandard analytical instruments, spectroscopy's far-reaching applicability now also stretches into the spirits industry and its attempts to detect — and eliminate — the millions of dollars worth of counterfeit brandies, whiskys (whiskeys), and rums that reach the public each year.

Developed in part with funding from Diageo, one of the world's leading spirits producers, the sAd Brand Authenticator is a portable UV spectrophotometer that has made it possible for the laboratory to go to the sample. Better yet, authenticity tests that were once completed over a stretch of days in the lab now can be completed onsite in less than a minute.

"Diageo contacted us in June of 2002," says John P. Ferguson, sAd's sales director. "[Diageo's William MacKenzie] had established, through UV transmission spectroscopy, that individual whiskys have unique spectral signatures and that most counterfeit products had significantly different signatures than the genuine products.

"In the lab, they were able to determine which were genuine and which were counterfeit brands," Ferguson continues, "but that wasn't practical for general use so they wanted a portable unit made that was simple to use and not too technical."

Five prototype models of the Authenticator first were delivered in December 2002. Diageo sent two to South America, one to Spain, and kept two in the UK for performance analyses. Following three months of intense evaluation, Diageo approved the Authenticator's performance and ordered five production models, which were delivered in September 2003. Currently, the 10 portable spectrophotometers are being used in South America, Southeast Asia, and Europe — three areas that have been hit hard by counterfeiting — to help counter an epidemic that brings about losses in the hundreds of millions of dollars each year to the spirits industry.

"We don't have the numbers as far as the financial implications of the instrument. As far as I'm aware, Diageo doesn't

have any numbers yet either; it's a bit early," Ferguson says. "This is a worldwide problem and at the moment there are just the 10 instruments.

"We see the Authenticator as having wide implications," he continues. "It can be applied to all colored spirits. The only things it can't be used with, because they don't have significant UV signatures, are vodkas and some gins."

Beyond the positive financial ramifications it offers, and the fact that it can perform onsite analyses, the Brand Authenticator's ability to be used by operators with varying technical backgrounds also

made it an attractive purchase to Diageo. The 5-lb, waterproof unit takes users through a simple-to-use, step-by-step process that culminates with a color-coded result — green for authentic samples, red for counterfeit.

"It's a comparative system so you have to have a standard to measure against," Ferguson says. "You put the sample in and identify what brand it is supposed to be by choosing it from a list. The instrument measures the sample, and after about 30 seconds, a result is displayed.

"Stored in the memory of the instrument is the standard UV absorbance of a range of genuine whiskys. At the moment, you can store 20 samples and then download that data onto your computer," he continues. "You can change those 20, so if your computer has 200, you can choose any block of 20 and drop it into the machine."

The Authenticator also should help in reducing public health risks. Over the past few years, counterfeit whiskys were found to have dangerous levels of methanol. Effects of methanol poisoning, which can be delayed for several hours, include severe abdominal pain, drowsiness, dizziness, blurred vision — which could lead to blindness — and difficulty breathing.

And while it may have made its debut as part of the spirits industry's fight against counterfeiting, Ferguson says the spectrophotometer, when armed with a different pathlength cell, can detect pollutants in water supplies, such as weed killers and fertilizers. ■

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