

## Abstract

Chemical manufacturers and shippers are challenged by the frequency of counterfeit and tampered products. Containers of chemicals used for anything from pharmaceutical to industrial applications are often times tampered with along the supply chain. This disruption can cost manufacturers millions of dollars every year and the loss of consumer confidence. Product Stewardship and Supply Chain professionals are often charged with reviewing and identifying methods of eliminating products being counterfeited, diverted or tampered with throughout the supply chain.

BS5609 compliant secure printed tamper-evident labels and seals applied to chemical drums and containers can help combat these issues by providing un-erasable evidence of tampering while also verifying the authenticity of the product. This intelligence allows businesses to maintain and monitor the integrity of their products, determine expiration, and track products through the supply chain.

Tamper Evident Label positions can vary: over the flange/bung, over the edge of the lid, and even integrated into the general GHS Product labeling onto the side of the containers. These labels can have covert, overt, or a combination of both customized secure print features, making seals difficult or impossible to replicate by counterfeiters. The seals are designed to self-destruct upon removal.

In addition to the security features integrated into these products, track and trace capabilities are enabled using proprietary codes. This allows the drums/containers to be scanned by an optical device within the supply chain to verify drum location and authenticity. Integrating more than one authentication feature on a drum seal allows for deeper protection against theft and diversion and significantly improves a company's product integrity strategy. Coding methodology is flexible, utilizing human readable codes, QR or 2D barcodes, NFC, RFID, etc. or any combination of technologies depending on the product and tracking goals. With proper due diligence, chemical manufacturers can be confident they're utilizing the latest available technology to reduce and eliminate counterfeit products in the marketplace.

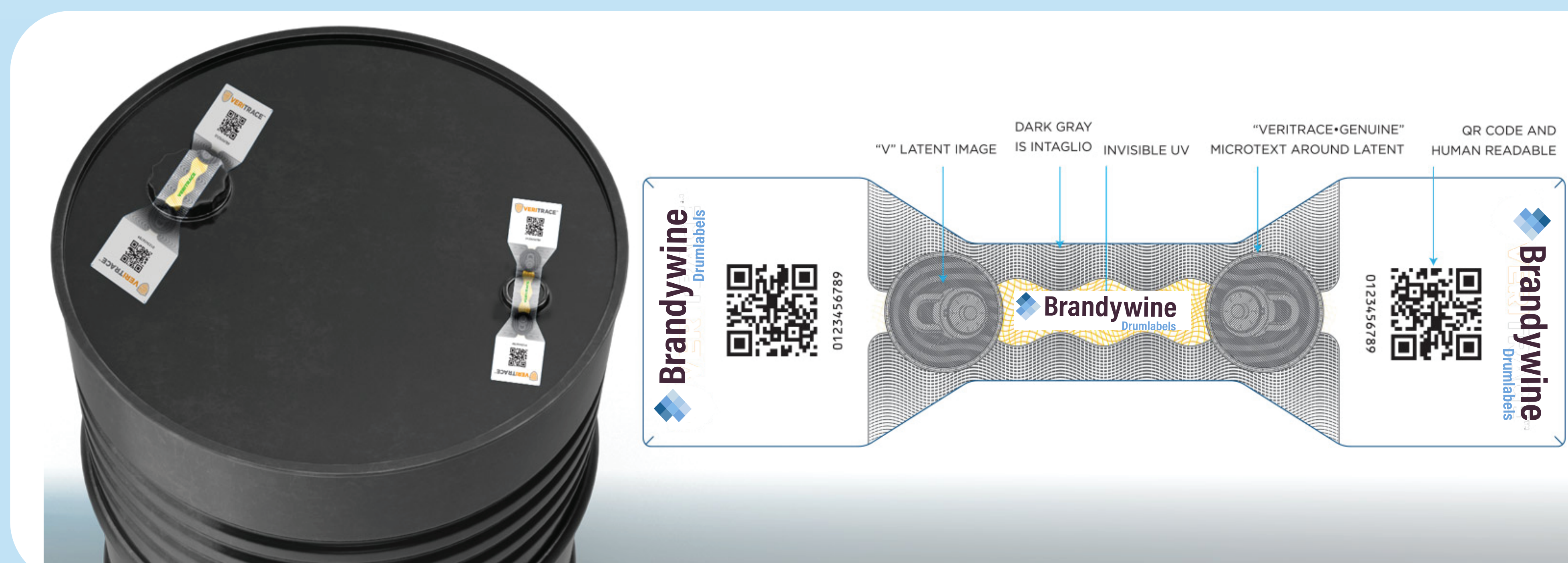
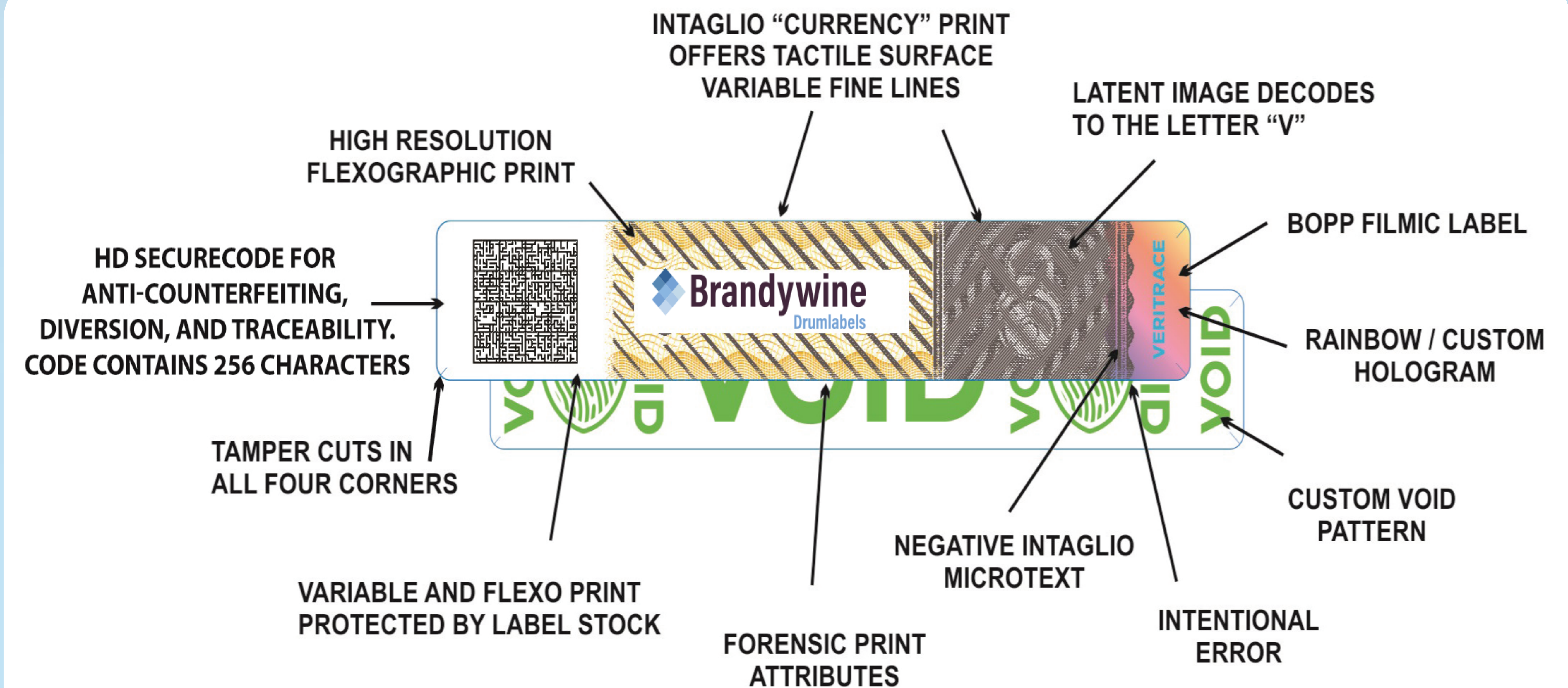
## Introduction

Today's regulatory compliance professionals are challenged not only to effectively communicate hazards but in many cases to coordinate with internal stakeholders to protect brands and combat counterfeiting of products. Since they are affixed to each product package Hazard communication labels provide an obvious vehicle to assist in those dual goals. Since the actual labels offer precious little real estate to work with the challenge becomes how to integrate tamper evident or software based security features into those designs.

Multi-layered strategies utilizing a variety of technologies that efficiently and effectively assist those professionals are doing just that. These technologies may involve overt, covert and forensic security attributes or some combination of all of these features. From basic residue based tamper evident labels to multi-layered labels with track and trace software the array of options is vast. A fully integrated system aligns individual units of products with the organizations warehouse, shipping and ERP system.

## Methods/Results

- ✓ Intaglio Print
- ✓ Track and Trace
- ✓ Void technology
- ✓ Microtext
- ✓ UV Print
- ✓ Tamper Cuts
- ✓ Foil Stamping
- ✓ UV Additives
- ✓ Taggant Additives



## Conclusions

Integrating these elements into product label design can provide companies with a convenient and cost effective way to achieve the dual goals of communicating product hazards while simultaneously protecting their brands from counterfeiting and diversion.