

Security Shouldn't be Breezed Over

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There are many factors that determine whether a banknote security feature is effective or not. The materials used, supply chain security, designs adopted, public education approaches, machine readability, consideration of local counterfeiting threats and the way a feature wears over time all contribute to the security of a banknote.

Global banknote counterfeit rates remain low (typically measured in parts per million) and the cost linked to counterfeit banknotes is much lower than that of alternative payment fraud. The low counterfeit rates are reported across multiple banknote specifications, suggesting that banknotes are generally secure, with no single 'silver bullet' security feature or substrate type. Instead security is achieved in multiple ways, layered throughout the banknote and delivered via different combinations of features. For issuing authorities, public confidence in the financial system is key for the economy, so they work hard to monitor the counterfeiting threat and upgrade their banknotes when appropriate, which helps keep the rate of counterfeit banknotes low. Polymer and paper substrates come with a good base level of security that is further enhanced in the final banknote.

With polymer, the need for polymer-specific security inks and complex window formations create new barriers to the more standard reproduction techniques. Furthermore, the cleaner look and smoother surface of polymer leads to security features, such as holograms, that are brighter and have stronger visual dynamic effects. These factors help explain why issuing authorities who have transitioned to polymer have reported a reduction in counterfeit levels.

Paper banknotes contain a security thread and even basic threads provide security because they are embedded in the paper (ie. the paper forms around the thread during the paper-making process). Paper fibres can be seen where the window of thread disappears into the paper substrate and the thread is apparent throughout the entire paper when the banknote is held up to the light. Close examination of a banknote typically reveals whether the thread is truly embedded or whether simulated threads have been stuck onto the paper.

And both substrates are manufactured in secure environments, meaning all banknotes come with a good level of basic protection from counterfeiting. Effects in the thread, layers of print features and additional machine-readable functionality, such as magnetics, then provide additional protection.



An example of KINETIC STARCHROME® in the Macedonia 2,000 denari.

There has been a recent statement that colourshift isn't secure (see CN June 2020), which didn't mention that all threads have inherent security through being embedded in the paper. Furthermore, the statement didn't mention that basic colourshift threads are typically available with magnetics and UV inks, providing additional machine readability and teller recognition security. Arguably the claim was too focused on one aspect of security and so the purpose of this article is to explore colourshift and security a little bit more broadly.

A good security feature is easy for the public (and others/machines) to authenticate but very difficult to replicate. It's not enough to see 'something' that changes when tilting a banknote – the public need to know precisely what to look for and so it needs to be easy to describe and remember. It is harder for counterfeiters to simulate a specific effect than a generic effect that does 'something.'

Colourshift provides a very simple and clear public education message that is easy to remember: tilt the banknote and the thread changes colour. Photocopiers, scanners and cameras will only ever capture one colour of the thread and the counterfeiter is forced to attempt to replicate a precise colour switch when attempting to simulate such a thread.

Colourshift is also incredibly durable – circulating banknotes and simulated crumple tests show that the colourshift effect remains even when the banknote is heavily worn. Issuing authorities considering a security thread upgrade should always look at how the technology performs after a crumple test and consider what it will mean for how the banknote thread will perform in circulation. If the thread effect quickly diminishes in circulation (ie. doesn't survive a basic crumple test) then there is a question about whether investing in the effect is worth it versus another thread where the effect endures.

Another advantage of colourshift threads is that product ranges exist with very clear differentiation between the lower and higher value denominations. Simple colourshift threads like STARCHROME® are well suited for lower banknote denominations, with high durability, a clear public education message and representing good value for money.

For higher denominations, where the notes are more rigorously authenticated and the counterfeiter is incentivised to spend more effort generating good simulations, combinational technologies can complement the 'family feel' of a banknote series by continuing a colourshift theme but providing a distinctly different appearance that protects the higher value banknotes.

IGNITE® has strong colourshift with additional movement effects that are precisely coupled to the colourshift. KINETIC STARCHROME® overtly combines colourshift and holographic technologies into unique thread designs, retaining the clear colour switching message but enhancing the security with additional holographic effects. Both IGNITE and KINETIC STARCHROME threads use colourshift technology but neither would be confused with a basic colourshift thread from a lower denomination, and so both help protect higher denominations from thread harvesting. This ability to differentiate and provide higher security options for higher value banknotes helps to keep banknotes secure. Where the threads used in higher denominations look like threads used in lower denominations then they are more exposed to the threat of thread harvesting.

So overall, colourshift threads remain secure. De La Rue supplies threads based on the three main technologies (colourshift, micro-optic and holographics) and our experts are available to support issuing authorities who would like to go into greater depth and breadth on this topic.