



OBERTHUR FIDUCIAIRE

RELIEF™ :  
3D SOLUTIONS FOR  
THE FUTURE



# RELIEF™ : 3D solutions for the future

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Oberthur Fiduciaire is bringing a striking new security feature to the banknote market with its robust new RELIEF™ 3D security thread.

A versatile new product to market, RELIEF™ can be used as a window thread, patch, stripe, or can also be cut for use in foils at Oberthur Fiduciaire's paper mill in the Netherlands.

## MEMORABLE AND EASY TO AUTHENTICATE

As a Level 1 security element, RELIEF™ meets industry expectations, producing banknotes that can be recognised and authenticated at speed.

RELIEF™ works by stimulating the observer's senses to perceive a visual tactility that does not exist – a highly memorable feature, which appears to the user as an intriguing and elegant trompe l'oeil.

RELIEF™ combines its intense and eye-catching visual colour shift effect with a dynamic 3D finish. The result is a robust new banknote security feature that performs well in circulation and has been developed to help people authenticate genuine banknotes with confidence.



## HOW THE UNIQUE EFFECT OF RELIEF™ WAS DISCOVERED

Like the discovery of penicillin or radioactivity, the technology that led to Oberthur Fiduciaire's development of RELIEF™ threads came about by accident – sidestepping the usual time, investment, and methodology required to make any such leaps in design innovation.

In place of the more traditional brainstorming sessions and the application of specific creative thinking, the discovery behind RELIEF™ was made during a laboratory trial.

An engineer working on an R&D project realised that a 3D image of her fingerprint had become visible in the printed liquid crystal samples she had touched when her finger was wet.

This striking visual effect piqued the curiosity of Oberthur Fiduciaire's R&D engineers, who, after a long process of trial-and-error, worked to understand the methodology needed to develop and consistently reproduce the unusual RELIEF™ effect.

## NEW TECHNOLOGY FOR ADDITIONAL SECURITY

When choosing any new security feature for the banknote market, the new component must integrate into existing processes with ease.

RELIEF™ combines a new production process with specific raw materials. The two elements work together to give this product its remarkable and unique 3D colour-changing effect – and provide greater protection against counterfeiting. In addition, when configured for use as a foil, the security of the RELIEF™ feature in

transparent windows can be applied by our use of the production facilities at our own paper mill in the Netherlands.

## HOW RELIEF™ CREATES UNIQUE AND ELEGANT BANKNOTES

Oberthur Fiduciaire technicians produce RELIEF™ security threads by manipulating and layering the localised alignment of liquid crystal inks on plastic carriers. By altering the visual appearance of the inks, they can produce effects with a unique optical intensity.

The distinct vibrant colour shift created by RELIEF™ is available in various colour combinations, each providing a striking visual contrast and eye-catching 3D effect.

Available in Purple-Blue, Orange-Red, Orange-Green, Blue-Green, and Green-Gold, these versatile colour combinations provide greater design freedom than traditional threads. And they give art workers the scope to create elegant banknotes in line with specified watermarks and print designs – all with the added benefit of increased security.

The methodology behind RELIEF™ has allowed us to broaden the angle of visibility of the colour shift effect. It provides additional design freedom, as liquid crystal need not be applied to the entire surface of the thread, patch, stripe – or window foil.

## A TROMPE L'OEIL OF VISUAL TACTILITY

The dynamic effect of RELIEF™, comparable to that of a 3D hologram, means that some previously designed areas may appear to have been shaded. In contrast, other areas look bright – stimulating the observer's senses with a colour shifting play of light and shadow.

While banknotes made with RELIEF™ may appear textured, the technology used is sharper than physical embossing. It allows for even more precise detail, creating a look of visual tactility on a perfectly flat smooth surface.

## ELEGANT AND VERSATILE

Available as a security thread, RELIEF™ widths start at 3mm, and any visual effects can be magnified up to widths of 6mm.

When used as a patch or a stripe, RELIEF™ can be applied with or without a transparent window to fully utilise the large display area.

The combination of RELIEF™ with a transparent window is exceptionally appealing. When held against the light, RELIEF™ appears to be transparent, while when held against a dark background, the 3D colour shift effect appears before the eyes with a striking pop of visual detailing.

## THE BENEFITS OF RELIEF™

### With RELIEF™ you can create:

- 3D designs without a variation in thickness
- Striking colour shifts
- Intriguing texture-like effects
- Secure 3D Cleartext
- Banknotes with magnetic properties

### Available widths:

- 3mm to 6mm

### Colour shift range

- Red – Orange
- Orange – Green
- Blue – Purple
- Green – Blue
- Gold – Green



In this picture, a palm tree and the 50 denomination are designed using RELIEF™ technology. The image appears to be a 3D image that would feel textured to the touch. However, this is an illusion as the palm tree image, and number 50 are printed on a perfectly smooth surface.

If the image is tilted, any light will follow the edges of the palm tree leaves, and bright spots will appear to roll around the curved lines of the "0" pattern.

In this configuration, areas that appear to protrude from the surface of the front side of the note appear to be sunken from the reverse side of the note. This reinforces the illusion of embossing.

### A ROBUST AND DURABLE SECURITY THREAD

Thanks to the non-embossed, machine-resistant 3D effect of RELIEF™ threads and foils, RELIEF™ products are thinner than existing alternatives and designed to resist the physical pressures of being used in circulation.

RELIEF™ can be printed over, and banknote paper that includes RELIEF™ can be varnished without damaging any visual aspects of the note. A versatile security thread, conventional features like cleartext and magnetism can also be included in the element structure.

### AN ECO-FRIENDLY SECURITY THREAD

As a fully printed thread, RELIEF™ provides the global banknote market with an option to choose a durable yet eco-friendly security thread. And because no metallisation or demetallization is necessary to include Level 2 and/or Level 3 security characteristics in the thread, manufacturing processes that have a high impact on the environment are not needed.

In terms of sustainability, the environmental impact of RELIEF™ threads is lower than that of notes which contain metallic elements. At the end of their lifecycle, RELIEF™ threads can be recycled easily.

### A NEXT-GENERATION SECURITY THREAD

The discovery of RELIEF™ represents a dynamic breakthrough in the banknote security features industry. This unique feature combines a remarkable 3D effect with a vivid colour shift effect to produce banknotes that are easily authenticated with confidence. Available for use as a security thread, patch or stripe, RELIEF™ marks a future-forward shift in the fiduciary industry from Oberthur Fiduciaire.

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