

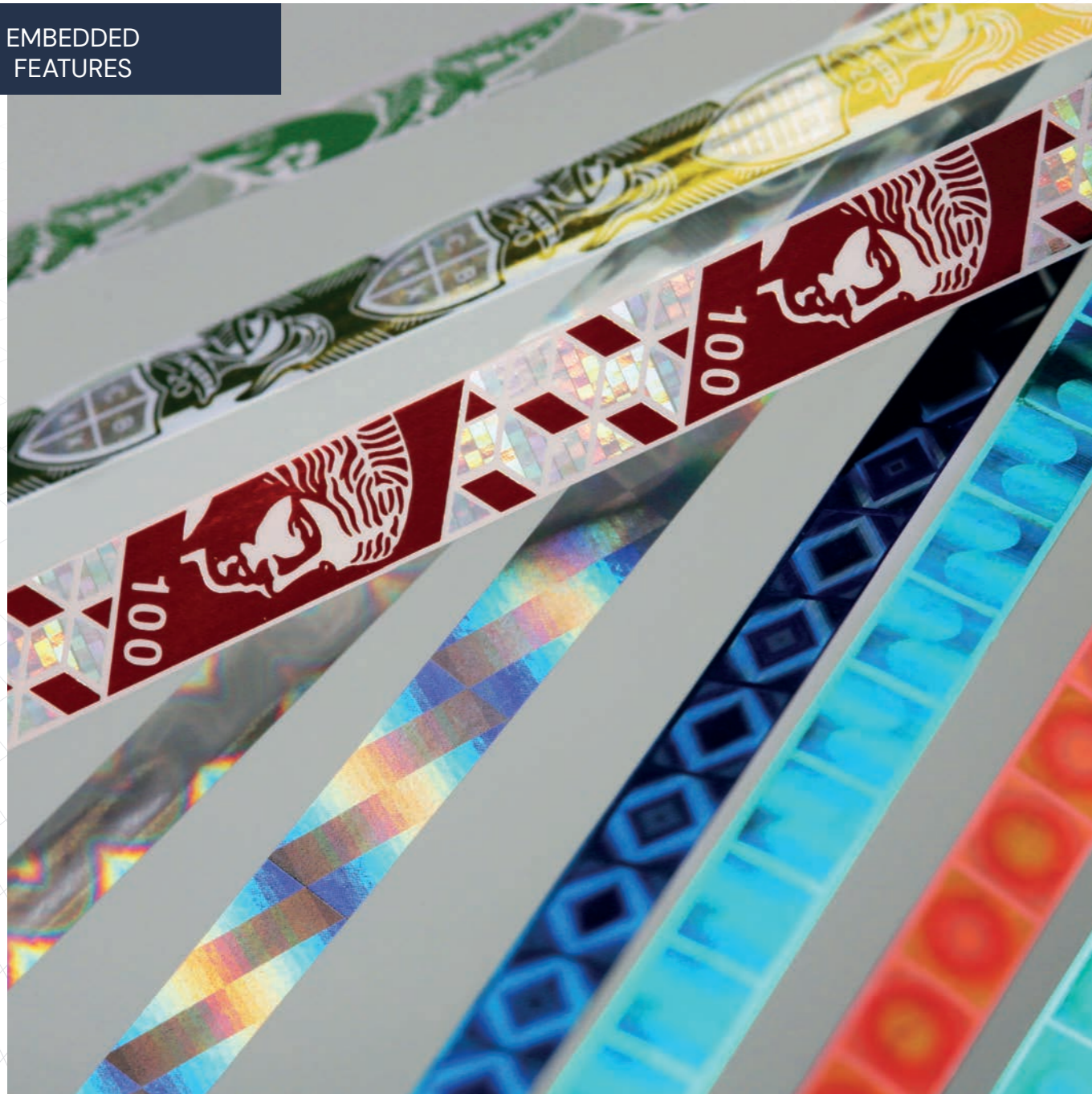


DeLaRue

CURRENCY

Paper Features





De La Rue *Currency*

De La Rue's purpose is to secure trust between people, businesses and governments. We provide highly secure solutions that underpin the integrity of economies and trade in 140 countries. We are the trusted partner of choice for central banks seeking to secure their cash cycles and the leading designer of new banknotes.

Our banknote security features represent the best of holographic, colourshifting, micro-optic and combinational technologies. We use precisely engineered micro-structures and De La Rue's deep design expertise to create uniquely crafted effects. We ensure your banknotes are protected with highly secure and beautiful features that integrate seamlessly into your banknote design.

We've spent 163 years manufacturing banknotes and have designed 55% of all the banknotes issued since 2020 (excluding those produced by state printing works). We are here to help you as you consider your next upgrade or new banknote series.

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Embedded *Technology*

De La Rue Currency has one of the most comprehensive suites of embedded security features available, circulating on billions of banknotes worldwide. Our products use colourshifting, micro-optic, holographic effects and combinational technology to create secure and striking primary security features for paper banknotes.

Holographic and colourshift technologies are ideal for lower denominations and can integrate a wide variety of impactful designs or combined with other technologies to double the counterfeit resilience.

Micro-optic and combinational effects are frequently used for higher denominations and appear on both threads and embedded stripes. The effects and animations are striking and can be customised for any banknote design.

Embedded technology is inherently secure by the default of being embedded in the paper. Each type of technology has a particular set of authentication techniques and aesthetics.

Embedded security features act as a prominent component within the layered security of a banknote. Applied patches and stripes can be used to enhance security complexity, each providing different points of engagement, identification and authentication throughout the cash cycle.

IGNITE®

Embedded security feature

Sharp, clear and obvious

IGNITE® is a vivid and dynamic next generation thread for mid to high value denominations of banknotes. It is available in a wide range of colours and movement effects and is developed as a customisable platform to meet issuing authority requirements.

The extensive colour palette and movement mean effects are sharp, clear and obvious across a wide range of viewing angles. IGNITE® expertly layers dramatic colourshift elements with proprietary microstructure technologies to create original and distinctive effects for public recognition.

Recognisable and Secure

IGNITE® is an ideal solution for banknotes that require a strongly coloured security thread. It is available in multiple combinations of colourshift and movement effects.

The clarity and eye-catching motion engages the user and benefits recognition. The customisation of the thread with denominational values or other designs (such as icons, images or logos) further enhances the recognition and security factors.

Combinational benefit

The combination of unique colourshift and movement technologies doubles the counterfeit resistance and ensures that it is very difficult to successfully counterfeit or attempt to simulate IGNITE®.

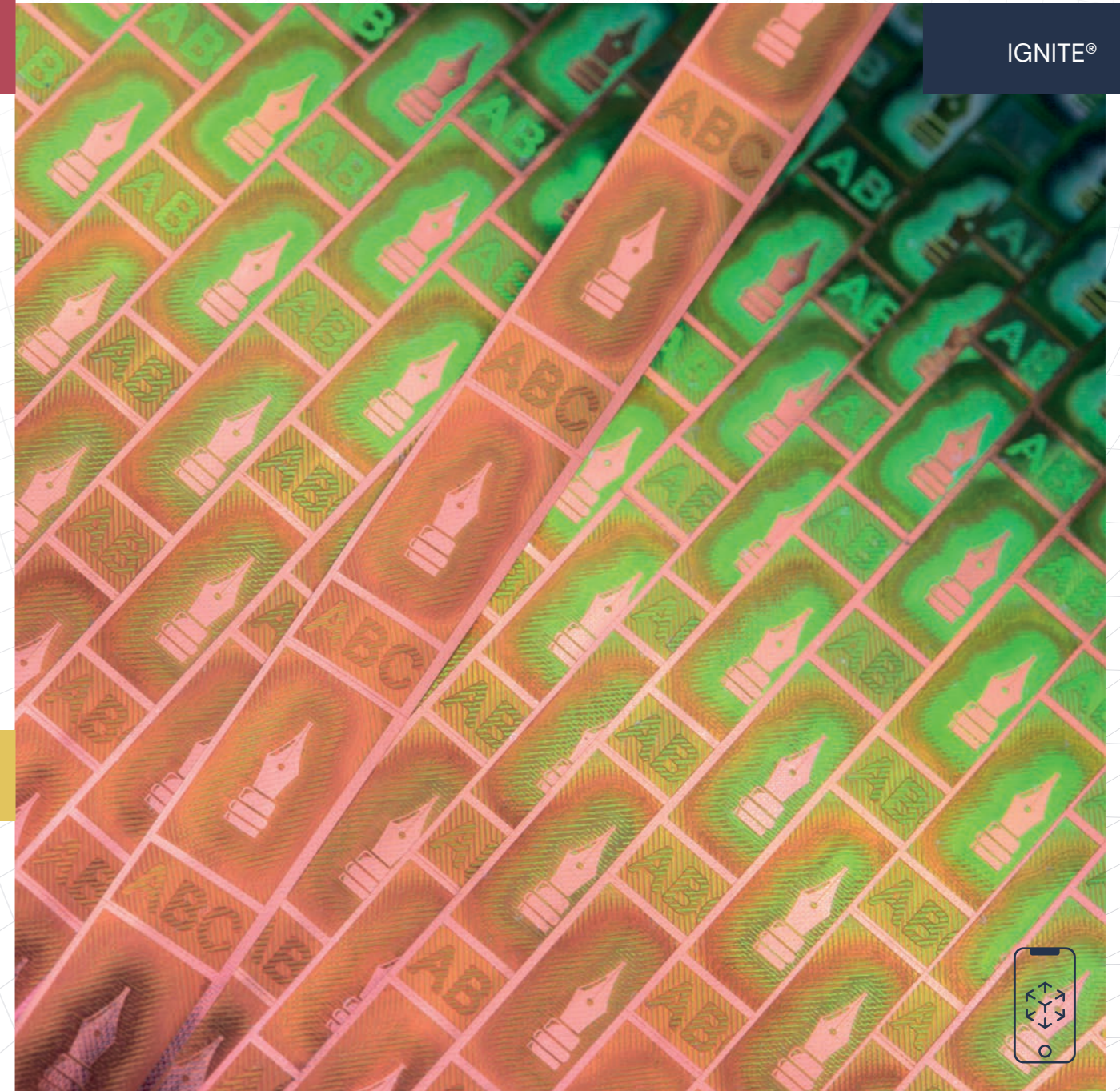
Adversarial analysis tests consistently demonstrated extremely high resistance to copying or mimicking the simultaneous dynamic and colourshifting effects of this thread.

IGNITE® can be specified with fluorescent capabilities and MagForm™. These options build on the existing level 1 recognition features and add level 2 recognition capability to the thread, increasing its security.

The technology driving IGNITE® combines advanced microstructures with an evolution of the colourshift capabilities established on the STARCHROME® platform which has been used on over 150 billion banknotes worldwide.

“IGNITE® is ideal for medium to high value banknotes, requiring a brightly coloured banknote thread”

IGNITE®



IGNITE®

Technical Specifications

IGNITE® incorporates two distinct effects which double the resistance to any risk of counterfeiting.

Customisable thread design, three colourshift options and six dynamic effects combinations offer a great deal of design flexibility, permitting many image and shape options to fit in with the overall banknote theme.

IGNITE® is one of the most secure threads in circulation today.

Thread width	2 - 4.5mm
Window length	6 - 10 mm (note height dependent)
Colourshift	Red-Green, Red-Black or Blue-Green
Movement	9 standard effects
Fluorescence	Yellow
Machine readability	Level 2 with MagForm (optional)
Varnish	Pre-print

Colourshift options

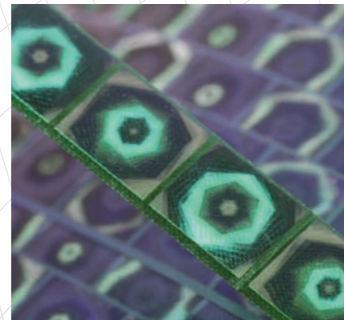


Movement effects

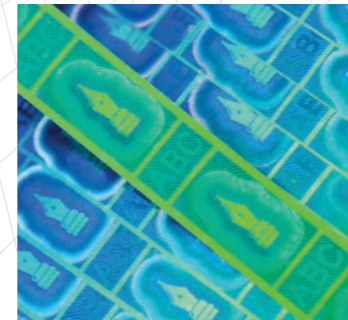
Geometric



Rotational



Contour



Recognisable and adaptable

Sharp and obvious movement engages public interest with the chosen thread design. A choice of eighteen colourshift and movement combinations provide a wide platform for customisation.

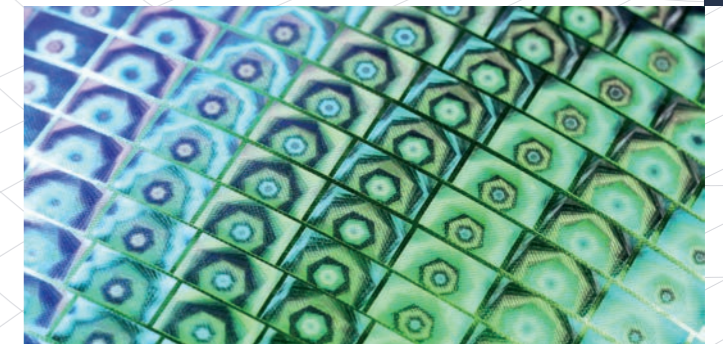
Broad application

IGNITE® is available in widths of 2 - 4.5mm and is ideal for mid to high denomination banknotes.

Secure and durable

Uses both colourshift and microstructure technologies to create a complex and multi-technology barrier to counterfeiting and simulation.

Successfully passed industry standard physical durability and chemical resistance tests.



PUREIMAGE™

Embedded security feature

Bright and bold

PUREIMAGE™ is a next generation holographic thread and patch, with novel movement and dynamic pulsing effects which can be seen at any angle. It is available in a range of dimensions and is customisable to meet specific issuing authority requirements.

Advanced origination techniques have been used by De La Rue's designers to create a range of obvious movement effects, combined with customised images. When these images are embossed into a specifically developed base foil, the result is a very bright thread with bold imagery and movement.

PUREIMAGE™ can be deployed across a series in increasing widths and with bespoke icons and shapes specific to each denomination.

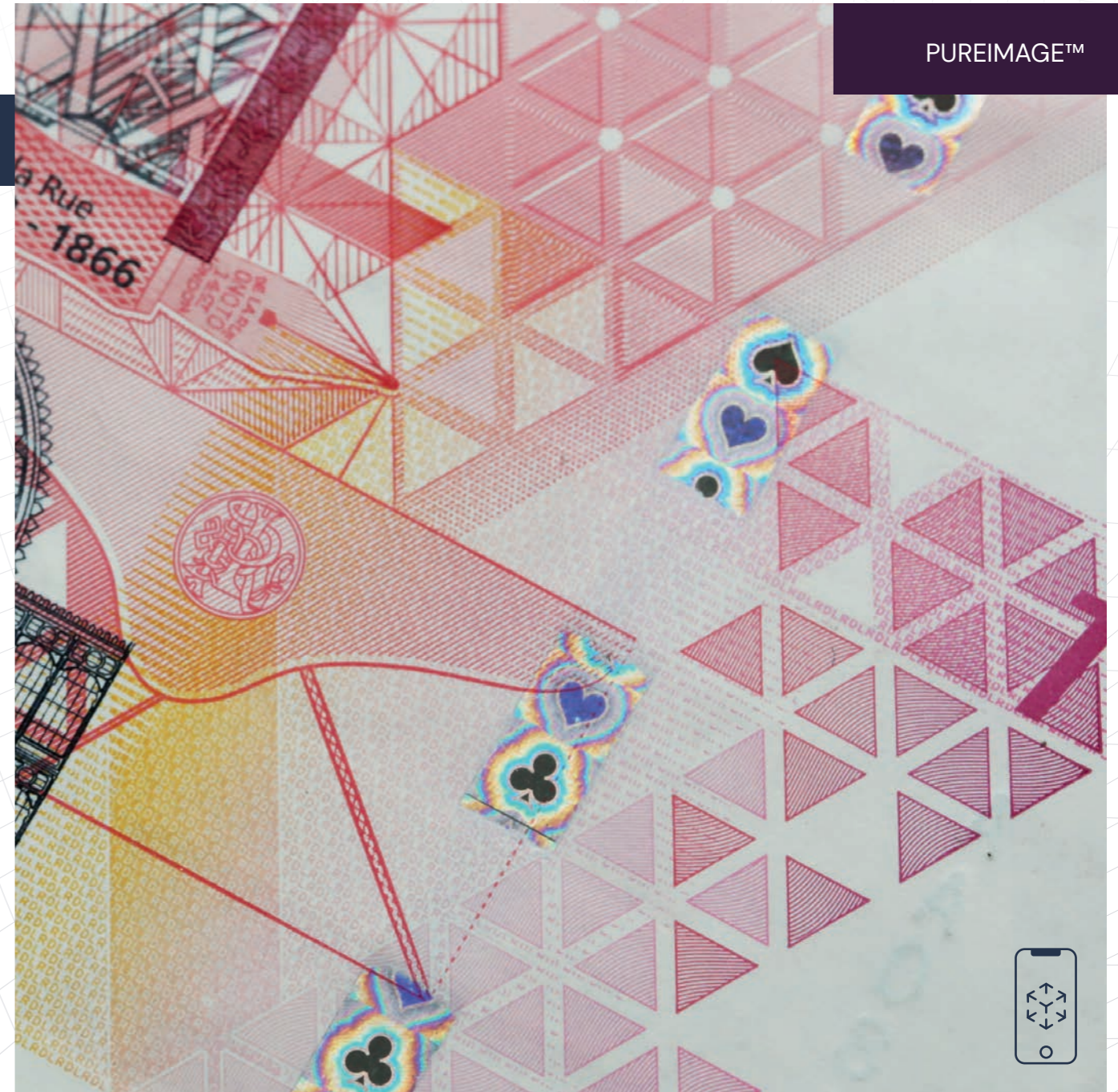
Resilient and distinct

It is easy to apply a consistent thematic style throughout a series with PUREIMAGE™. The ability to incorporate customised icons and shapes across increasing widths into the note helps make each denomination distinct and unique. The hard-wearing nature of the thread makes it especially suitable for denominations that experience extensive handling in circulation.

Versatile and popular

PUREIMAGE™ was developed to be a thread for flexible application. It can be combined with KINETIC STARCHROME® in a series, sharing common thematic styles, but with distinct features for the respective denominations. The holographic effects share synergy with applied holographic patches and stripes aiding public recognition and engagement.

“PUREIMAGE™ is the next generation of holographic thread, with novel movement and pulsing effects”



PUREIMAGE™

Technical Specifications

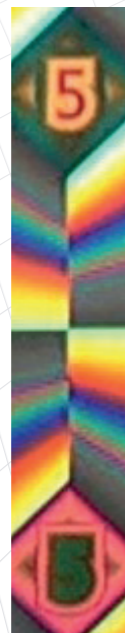
Holographic threads naturally catch the eye. Upon closer examination the advanced diffractive microstructures generate effects that are visible when tilted on any angle. With a wide viewing angle, PUREIMAGE™ is impactful in thread widths as narrow as 2mm and even more striking in wider threads.

PUREIMAGE™ can be used across an entire series, selecting wider thread variants for higher value denominations.

PUREIMAGE™ holographic effects require bespoke imaging equipment that is programmed with advanced code. This leads to novel holographic effect that includes pulsing, intuitive movement (one direction) and counterintuitive movement (opposing directions).

The designs can be customized, for instance incorporating characters or numbers into the effects, making this an incredibly versatile thread.

Thread width	2 - 6mm
Window length	5 - 29mm (note height dependent)
Fluorescence	Multiple colours available (optional)
Holographic colours	Silver
Holographic effects	5 different effects for customisation
Varnish	Pre-print varnish, post-print varnish
Machine readability	Level 2 / Magform available for threads wider than 3.1mm (optional)



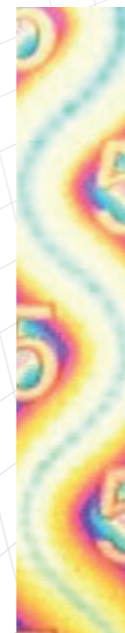
Blaze



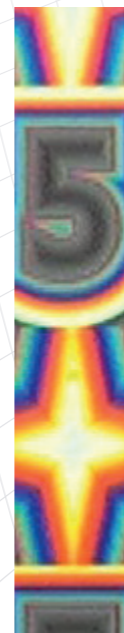
Climb



Orb



Slide



Switch

Engaging and recognisable

Bright and sharp colours matched with dynamic movement and pulsing effects which are visible at all angles - even at thread widths of 2mm. Five high-resolution holographic designs and a machine-readable option for wider threads.

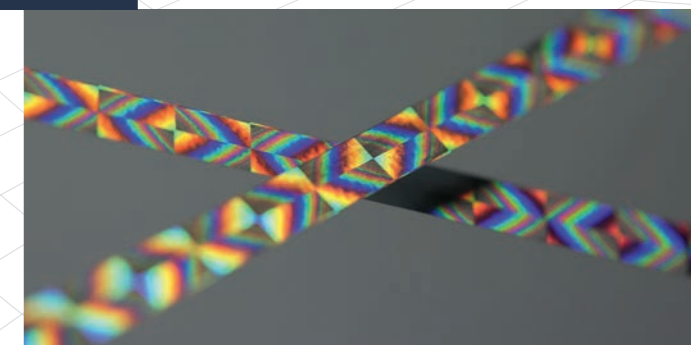
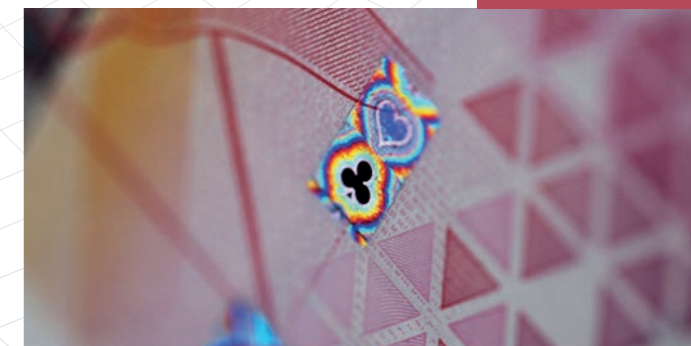
Designed for integration

The basic PUREIMAGE™ thread can be incorporated into paper substrate without difficulty. It is an easy thread to print with, is hard wearing and is ideal for lower to medium value denominations.

The effects in PUREIMAGE™ can be designed to resonate with the theme of the banknote, increasing engagement.

Secure and impactful

The PUREIMAGE™ thread can incorporate ClearText® areas, fluorescence and magnetics at different widths. Diffractive micro-structures and holographic effects create a high threshold against counterfeiting and simulation attempts.



KINETIC STARCHROME®

Embedded security feature

Easy to recognise

KINETIC STARCHROME® is a secure and easily identifiable security thread for all denominations of paper banknotes. It is available in many combinations of width, colour and effects and can be customised easily to specific issuing authority requirements.

The feature uses De La Rue's proven technology platforms of holographics and the colourshifting of STARCHROME®. The sparkle of the hologram is engaging to the eye and the colour shift characteristic enables easy public identification.

Flexible application

Using KINETIC STARCHROME® it is easy to apply a common design theme throughout a series of notes, whilst making each thread distinct from the other denominations. This reduces the risk of thread harvesting and increases counterfeit resilience.

PUREIMAGE™ holographic effects can be combined within KINETIC STARCHROME® threads creating distinct features for each denomination across a series. The holographic effects share synergy with applied holographic patches and stripes aiding public recognition and engagement.

Proven security

The combination of colourshift and diffractive movement ensures that it is very difficult to successfully counterfeit or attempt to simulate

KINETIC STARCHROME®. During adversarial analysis tests, the feature was found to require a large number of steps and multiple materials during attempts to simulate the thread.

KINETIC STARCHROME® can be specified with UV fluorescent capabilities and MAGFORM™.

These options build on the existing level 1 recognition features adding level 2 authentication to the thread, increasing its security.

The technology driving KINETIC STARCHROME® was established with the STARCHROME® platform and has been used on over 150 billion banknotes worldwide.



KINETIC STARCHROME®



“KINETIC STARCHROME® is ideal for environments where the risk of thread harvesting is especially high”

KINETIC STARCHROME®

Technical Specifications

KINETIC STARCHROME® incorporates four distinct effects which double the resistance to any risk of counterfeiting, customisable thread design and four distinct holographic effects.

These combinations offer a great deal of design flexibility, permitting many image and shape options to fit in with the overall banknote design theme.

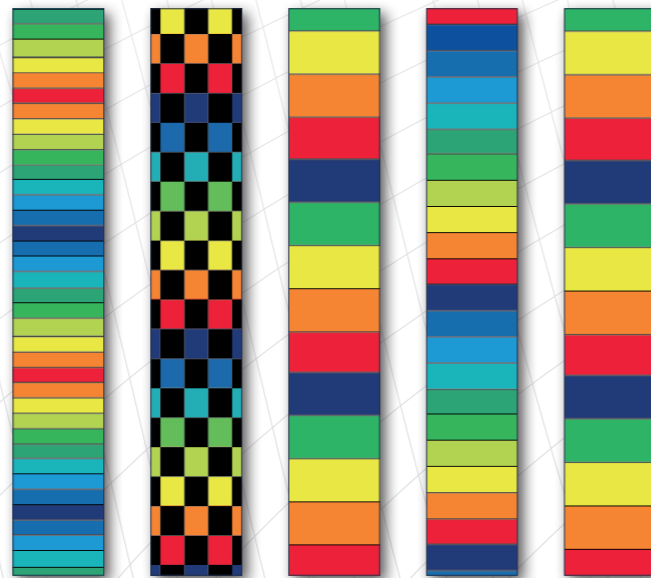
The variety of combinations make each thread visually striking and secure.

Thread width	4 – 6 mm
Window length	5 – 29 mm (note height dependent)
Colourshift	Red/Green or Blue/Green
Kinetic variants	4 standard effects in Silver or Gold. Also available with PUREIMAGE™ effects
Machine readability	Level 2 / Magform (optional)
Fluorescence	Multiple colours available (optional)
Varnish	Pre-print varnish, post-print varnish

Colourshift options and customisable thread design



Holographic effects



Easy to recognise

Sparkling movement engages public interest with the chosen thread designs. Six standard designs with red/green and blue/green colourshift and gold or silver holographic effects.

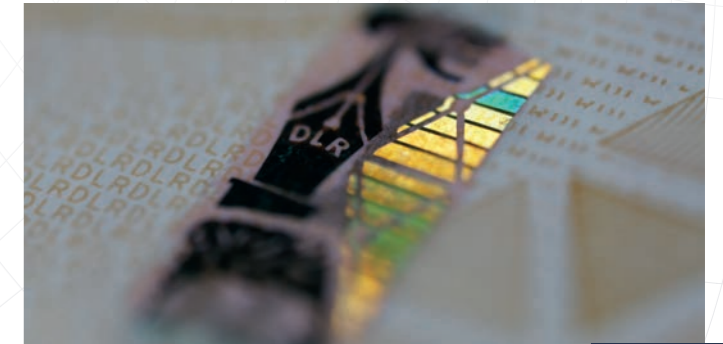
Customisable and sophisticated

Highly customisable image designs and multiple combinations available. Demetallisation options for Scroll™ and ClearText® available. Thread widths of up to 6mm and window lengths from 4 – 29mm.

Secure and durable

Uses colourshift and holographic technologies to create a high adversarial analysis threshold against counterfeiting and counterfeit simulation.

Successfully tested against industry standard physical durability and chemical resistance tests.



NEXUS™

Embedded security feature

A new type of feature

NEXUS™ is a new category of security feature for mid and high value denomination banknotes – embedded stripe.

The 18mm wide stripe, with a full height window has a surface area populated with bright colours, dynamic imagery and engaging micro-optic effects. It is embedded into the paper, sharing the same high security and durability benefits found in banknote security threads.

The very large surface area provides a superior and memorable alternative to existing feature types and makes the banknote stand out to the public.

Customisable

The feature is available in multiple colours and bi-colour combinations which utilise depth and inversion movement effects. Custom images can be added to the design which can be echoed across different features on other denominations.

NEXUS™ has a range of effects which can be seen when tilted: depth, inversion and 3D contouring are currently available.

The shape of the stripe is also customisable with non-linear edge designs an option.

Development

Embedded stripe technology is a development of De La Rue's OPTIKS™ feature, which has circulated across Europe, the Middle East, Asia Pacific and the Caribbean, NEXUS™ couples the embedded nature of OPTIKS™ with new micro-optic effects and features, enabling movement and depth across the entire stripe.

“NEXUS™ is ideal as a premium feature for high denomination banknotes”



NEXUS™

Technical Specifications

NEXUS™ incorporates micro-optic effects across a very large surface area.

Customisable designs, multiple colours and movement effects provide a great deal of design flexibility. The width of the stripe permits larger high resolution images to be used, making each denomination of NEXUS™ unique and highly resistant to counterfeiting attempts.

Strong public recognition is afforded by the large micro-optic area. This feature is integrated into the paper at the very start of the paper manufacturing process which grants excellent processability and no increase in overall substrate thickness.

Micro-optic effects

Depth

Creates a sense of depth which extends beyond or below the banknote.

Foreground and backgrounds are created, between which customised content appears to float. Moving the note reinforces the sense of depth as the foreground and background respond to the movement, the customised design remains anchored in the midground, providing a visual reference which enhances the perception of depth.

Embedded stripe width	18mm
Window length	Full height of the note
Effects	Depth, Inversion & 3D contouring
Characteristics	Extremely flat ream shape
Colours	Blue, Purple, Magenta, Red, Violet, Teal, Green, Taupe
Security	Level 1 recognition
Varnish	Pre-print



Inversion

Custom designs flip from light to dark or switch 'on/off'. Intertwined symbols and motifs flip to their negative, in a dark-light flip.

3D contouring

Elements of the design features in the stripe appear to catch the light as the note is tilted. The hibiscus flower used on some of the house note samples appear to curve away from the centre as a light spot rolls over the design.

“There is no other embedded security feature available today with the size, clarity and visual impact of NEXUS™”

Remarkable and distinct

NEXUS™ is visually remarkable, responding to the current trend for large eye-catching features which create engagement and aid public recognition.

A large surface area which utilises micro-optic and movement effects make NEXUS™ a striking and recognisable effect.

Unique and secure

There is no other micro-optic security of comparable width that can be integrated in this innovative and secure manner.

The extremely flat ream profile shape of NEXUS™ makes this feature incredibly resistant to counterfeiting and simulation attempts.

Customisable

NEXUS™ can be specified with different colours, effects and unique images within the stripe.

The large surface area of the stripe and the full window height permit large high resolution images to be displayed.



Enhanced GEMINI™

Specifications

Instantaneous impact

Enhanced GEMINI™ is a distinctive and versatile level 2 print feature that reveals itself under ultra-violet (UV) light for cashiers, and tellers to validate. The hidden image appears as two colours when illuminated with UV and is intricately linked to the image or pattern work of the visible print. The UV effects make it easy for the bank teller to verify using a standard UV lamp. The combination of one visible colour and two fluorescent colours provides greater resistance to simulation and counterfeit attempts.

Complex and detailed designs are incorporated using different design techniques, such as blocks, lines and microtext which are used to make up complex designs distinct to each denomination.

Easy integration

Enhanced GEMINI™ is applied in the lithographic printing stages, allowing it to easily integrate with other security features in the overall banknote design. It can be used with polymer and paper substrate.

Variety of effects

The variants of Enhanced GEMINI™ that are available are "Enhanced GEMINI™ Blocks", "Enhanced GEMINI™ Lines" and "Enhanced GEMINI™ Microtext" or a combination of these effects to create distinct patterns and fine detailing to compose the UV variants of the feature.



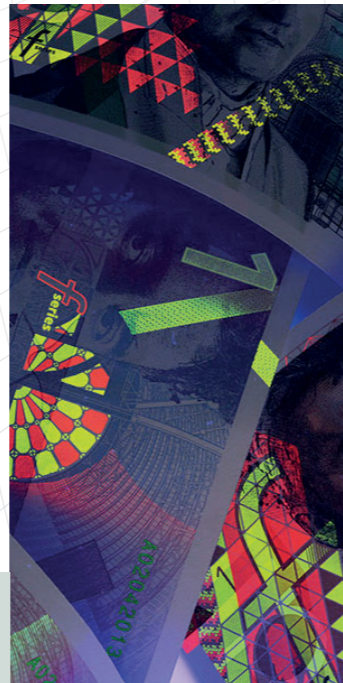
Viewed normally



Viewed under UV light

Recognisable and popular

GEMINI™ variants have been chosen to appear on over 150 different denominations of all values. It can be easily retrofitted onto existing designs when updating a series. It is De La Rue's most popular print feature.



ENHANCED
GEMINI™



MASK™

Specifications

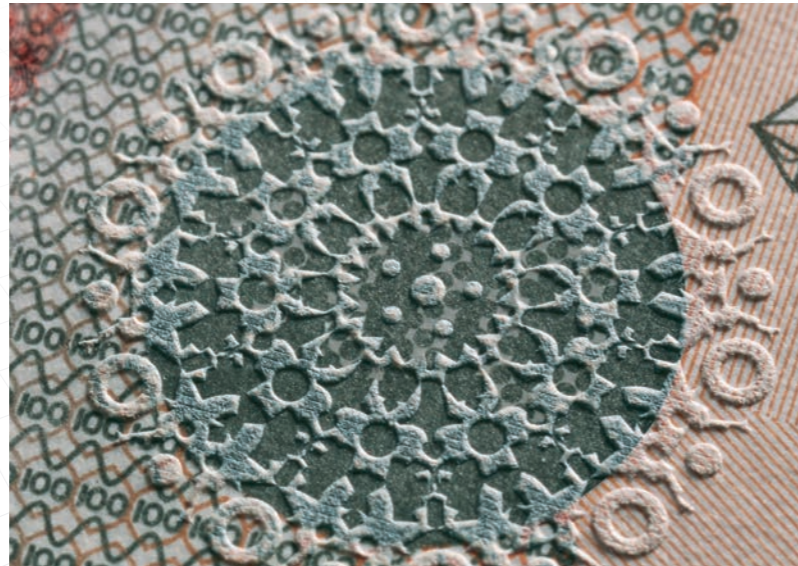
Hide and Reveal

MASK™ is a level 1 hide and reveal print feature, which appears as a pattern when viewed in reflection but revealing hidden artwork when viewed in transmission.

It uses a dark or strong colour, combined with white, to appear as a block of pattern when viewed normally. When held up to the light letters or numbers show through to reveal letters or numbers, such as the denominational value or the initials of the central bank.

MASK™ is a cost-effective means of visually linking banknotes in the same series, appearing as coloured or shape variants in a similar position on the note throughout the series.

This feature is suitable for both polymer and paper substrates and is a simple and effective way to enhance banknote security. It is an ideal crossover feature when updating a banknote design from paper to polymer substrate as it can carry over familiar design elements and functionality.



Viewed normally



Held up to the light

MASK™
ON PAPER



“MASK™ is easy to describe and easy to identify, making it ideal as a public recognition feature”





Holographic Expertise

De La Rue Currency has created one of the most diverse and comprehensive holographic feature portfolios commercially available.

Our holographic origination techniques have created features and effects that are clear, visually striking and secure.

Classical, image based holography offers the ability to display detailed images and effects that provide a unique security barrier to counterfeiters. This proprietary technology is ideal for creating secure art and imagery that can't be replicated with commercially available equipment.

De La Rue's advanced digital origination creates unique and intuitive movement effects that are increasing in popularity. These utilise movement, animation and colour, producing vibrant effects that are easy to explain and understand.

Combinational holograms maximise the benefits of both classical and digital origination techniques in holographic stripes. This combinational approach requires entirely different equipment and know-how to replicate, ensuring a particularly secure security feature.

Holographic features

Depth effect

DEPTH™ Image

A major effect that simulates the appearance of three dimensional movement below the surface plane of the hologram. e.g cloud movement behind an image. DEPTH™ simulates real-life perception of depth by ensuring that images appear to move more slowly when further away

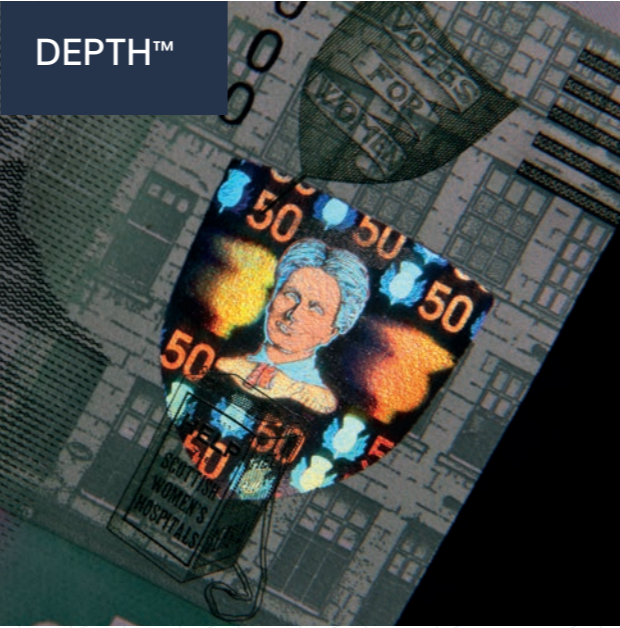
Switching

DUAL™ Image

Displays a clear switch between two distinct images in the same position on a hologram. The user can see one of the two images, that switch when the banknote is tilted. With a simple switch between two strong images, this feature is easy to explain and easy to understand.

MULTI™ Image

Used in combination with DUAL™ Image. MULTI™ Image provides a clear colour switch using a repeating pattern of icons or numerals. These change colour when the banknote is tilted giving a further layer of authentication with the DUAL™ Image switch. The MULTI™ Image repeating pattern additionally adds a larger area of holographic effect giving greater resistance to circulation damage.



Holographic features

Colour and movement

PUREIMAGE™

A new dynamic effect utilising the latest high-resolution origination techniques to produce unique movement and animation effects that can include contraction and expanding effects.

Movement appears when tilted and with a wide viewing angle. PUREIMAGE™ is available for threads, patches and stripes.

RGB Photo realistic portrait

Used for creating highly detailed and accurate colour representations of iconic figures, the photo realism within the effect serves as a point of crossover between the holographic and the print design elements of the banknote.

These portraits can be combined with various other holographic effects, including DEPTH™, DUAL™ and MULTI™. The quality of the image and combination with other effects facilitates public recognition and creates a point of engagement and authentication.

PUREIMAGE™



Currency: View

Scan the QR code to use our augmented reality app.

Look for the 'AR ICON' and scan the trigger image or object to see our products come to life.



Currency: View is available for download on the Apple App Store and Google Play Store

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1

DOWNLOAD

Scan the QR code and download the app from your app store.

2

SIGN UP

Create an account to begin using the app.

3

SCAN

Look for the icon in the corner of a picture and scan the image or object to see our work come to life.



4

VIEW

Watch our products come to life on the page.

5

SHARE

Tap the camera icon in the app to share a screenshot.

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