The Invisible Man concept banknote, commissioned by the National Bank of Kazakhstan in 2014, aims at developing design, integration and printing excellence by exploring latest banknote technologies and new printing possibilities with the use of the five-colour intaglio press, the security ink solutions SPARTE, SICAPAL and NEO MAG on Landgate’s novel paper-polymer substrate. The development of the Invisible Man has brought new insights and knowhow to banknote production for all those involved and knowledge banknote designers, the printer, the central bank and the technology suppliers involved. The specimens have demonstrated both chemical and physical resistance of the security features, as well as their printability and adhesion on the hard working lower denomination banknotes.
The Invisible Man concept banknote has been a journey of exploration and discovery. It combines the artistry and imaginative flair of banknote design with a novel and innovative banknote substrate; it uses the latest origination and print processes. The result of this journey is an imaginative and beautiful concept banknote that achieves perfect balance between artistic creativity and innovation.

With the Invisible Man concept banknote, the banknote designer Mendybay Alin tells a story of the senses, in particular the sense of touch and texture. “The sense of touch is an equally important way for the general public to build a connection with banknotes apart from a visual appreciation,” he said.
The inspiration of the concept banknote is Herbert George Wells' science fiction novella "The Invisible Man". H.G. Wells was born in 1866, in Kent, and died in 1946 in London. He is now best known for his work in the science fiction, but his work also spans other genres: politics, history, social commentary and contemporary fiction. Some of his early novels, such as The Time Machine (1895), The Invisible Man (1897), The War of the Worlds (1898) and Island of Doctor Moreau (1896) introduced themes which have gone on to become classics of science fiction literature. Alongside other authors like Jules Verne and Hugo Gernsbach he is often referred to as the father of science fiction, and is regularly cited as an inspiration by contemporary authors including Olaf Stapledon, J.D. Beresford, Naomi Mitchison, Karel Capek and Yevgeny Zamyatin.

FILMS AND TV SERIES
The Invisible Man was first adapted for the screen in 1931 in a film directed by James Whale. The film is considered one of the great Universal Pictures horror films of the 1930s. It was followed by numerous sequels, as well as many "spin-offs" using the idea of an invisible man that is largely unrelated to Wells' original work.
A mysterious stranger, Griffin, arrives at an inn in the English village of Iping, West Sussex. He wears a long, thick coat and gloves; his face is completely hidden by bandages except for a fake nose and a hat. He is unfriendly and irascible, and spends most of his time locked in his room, working with a set of strange glass bottles, laboratory apparatus and chemicals, only coming out of his room at night. Having run out of money and being asked to quit the premises, he reveals part of his invisibility to his landlady, Mrs. Hall. An attempt to apprehend the stranger fails as he undresses to take advantage of his invisibility, fights off his would-be captors, and flees. Betrayed by Marvel, the assistant he has found himself, and tracked by the police, Griffin takes shelter in a nearby house. The house turns out to belong to a former acquaintance from medical school, Dr. Kemp, to whom Griffin reveals his true identity and the story of how he became invisible. Griffin explains to Kemp how he first experimented with Mrs. Hall’s cat, administering the potion to it first, before then trying it on himself.

Hunted by the authorities, Griffin soon realizes that surviving in the open as an invisible man will be very difficult, and he decides to attempt to reverse the invisibility. He hopes to make Kemp his secret confidant, telling him of his plan to start a “Reign of Terror” by using his invisibility to terrorize the nation. However, Kemp has already denounced Griffin to the local authorities. When the authorities arrive at Kemp’s house, Griffin manages to escape. Caught the next day, Griffin is seized, assaulted and killed. As he dies, the Invisible Man’s naked body gradually becomes visible.
Mr Mendybay Koishybayevich Alin is the Chief Designer of the National Bank of Kazakhstan and is the artistic inspiration behind the Invisible Man concept banknote.

Mr Alin has been the creative force responsible for many of the circulation and commemorative banknotes of Kazakhstan since the issue of its national currency in November 1993. He completed his training in graphical design at the Moscow Polygraphic Institute and then worked in book publishing and the illustration of children’s books for over 30 years. He is also an artist, painter, designer and typographer. He joined the staff of the National Bank of Kazakhstan as it was being established and continues to work there to this day. He is currently one of the most well known designers in the world of banknotes and has won extensive recognition for his achievements in the field of banknote design including:

- The 2007 IACA award for the best banknote (10,000 tenge)
- The 2008 IACA award for the best use of a new security feature on a banknote (Spark® on the 5,000 tenge)
- The 2011 IBNS award for banknote of the year (10,000 tenge)
- The 2012 IBNS award for banknote of the year (5,000 tenge)
- The 2013 IBNS award for banknote of the year (1,000 tenge)

He has also been recognized for his extensive achievement in the field of children’s book illustrations. Mr Alin was awarded a UNESCO medal and diploma at the NOMA competition for picture illustrations in Tokyo in 2002.
Mr Alin was inspired to undertake this project by the unique opportunities offered by the Durafort® substrate to integrate creativity and flexibility in design with a highly secure and innovative substrate.
H.G. Wells' science fiction novella is the inspiration behind The Invisible Man’s design. Using the flexibility offered by having distinct paper tints on each side of the substrate, Mendybay has skillfully created two different atmospheres on the obverse and reverse of the banknote.

On the obverse side, printed on a fine guilloche background, the main theme is the Invisible Man’s portrait in swirling geometric lines formed out of the smoke from pipe. The dominating blue tints of this side's themes tone perfectly with the blue paper tint. The leaves behind the smoke blends in subtle harmony with the blue and yellow iridescent stripes.

In the hat at the top of the banknote, Mrs. Hall's cat appears in the form of a watermark: half visible, half faded into invisibility in the moments after Griffin administered the potion to the cat.
The banknote's reverse side, printed on an off-white tinted paper layer, shows Griffin's head at the top, a hand gun and Mrs. Hall's cat. The bottom of the banknote depicts the English countryside where the novella takes place along with the other protagonists of the story.
The Substrate

Durafort® provides a unique platform for The Invisible Man concept banknote. Durafort is the optimization of Landgart’s unique paper-polymer-paper technology for hard working lower denomination banknotes. It combines the recognized advantages of 100% cotton banknote paper with the durability of the polymer core in a single high security platform. The outer layers of banknote paper maintain the industry acknowledged advantages related to security, tactility, ink adhesion and printability. The polymer core adds durability in the form of mechanical strength.

Durafort® is a three layer (paper – polymer – paper) composite substrate that allows existing traditional security features like cylinder-mould and e-type watermarks, foils, embedded threads, iridescent stripes, security fibres, taggants and all types of embossed or printed elements to be integrated into the banknote design. Fused between the two paper layers, the polymer core has chemical properties that make it perfectly compatible with the paper outer layers and banknote printing process.

Durafort® is, with Durasafe®, the only banknote substrate that uses two paper layers. Two rolls of paper are prepared as inputs prior to the conversion process, meaning that different paper tints and security features can be integrated into each layer, adding significant barriers for the counterfeiter. The Invisible Man concept note was printed on a bicolor Durafort® substrate with security thread. The blue layer contains a mould-made and an e-type watermark. A first in the banknote industry, each paper layer contains a different type of invisible security fibres, so that yellow fluorescent fibres are visible on the blue side, and blue fluorescent fibres visible on the white side.
An Irisafe® Micro stripe has been applied to the blue paper layer. Irisafe® Micro has been developed by Landqart to give increased security and aesthetic appeal to the iridescent stripe. It is made up of several micro stripes of different colours that can be combined together in a range of widths. In this case the feature consists of four stripes of 2mm each in gold and blue.

Combining high security and durability, Durafort® is the perfect substrate for denominations circulating in demanding environments.
The Invisible Man design motifs are integrated on the banknote through offset, screen and intaglio printing using the latest SICPA security ink technologies. The printed elements of SPARK® and intaglio are public features which can be authenticated by sight and touch. The machine-readable features SICPATALK® and NEOMAG® provide optimal automated detection.

**SPARK®**

SPARK® is a dynamic, bright optical security feature, exhibiting vivid colours, a striking colour-shift (gold to green) and dynamic effects which are highly visible and easy to detect. By tilting the banknote specimen, the light movement gives the SPARK® feature dynamics which cannot be reproduced without the specific inks and the required security equipment.

**INTAGLIO**

SICPA provides a versatile intaglio ink series suitable for a multiplicity of banknote substrates, including the novel Durafort® paper-polymer substrate. The versatile ink series can be overprinted on screen inks and offset inks, as well as on security threads, foils and stripes to achieve enhanced security. The inks are compatible with different designs and engraving types. Intaglio ink series are continuously developed in response to the constant innovation and complexity of today's banknote printing.
SICPATALK®
SICPATALK® is a reinforced machine-readable solution, optimising the infrared detection of existing cash automation systems with specific IR solutions exclusively available for banknote applications. Current counterfeiting of IR-absorbing colours relies on the use of carbon black; integrating IR-absorbing SICPATALK® in bright, clean colours is an effective solution against counterfeiting. Available in intaglio ink solutions, SICPATALK® ensures durable and consistent machine readability.

NEOMAG®
NEOMAG® is an innovative security solution developed for enhanced protection of banknote automation using specific magnetic material. Unlike conventional magnetic inks which are dark in colour and IR-absorbing, NEOMAG® has specific IR-transparent magnetic pigments which are light in colour. Formulated in a wide spectrum of colours notably in clean shades, NEOMAG® can be efficiently integrated into banknotes as a durable intaglio-printed feature for effective protection against counterfeiting.
### Technical Data of The Invisible Man Durafort<sup>®</sup> substrate

<table>
<thead>
<tr>
<th>Physical properties</th>
<th>Unit</th>
<th>Typical values</th>
<th>Test standard</th>
</tr>
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<tbody>
<tr>
<td>Substance</td>
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<td>ISO 536</td>
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<tr>
<td>Thickness</td>
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<td>Tensile Strength (mean)</td>
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<tr>
<td>Wet Strength</td>
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<td>ISO 3781</td>
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<tr>
<td>Mean double folds</td>
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<tr>
<td>Tear Resistance</td>
<td>mN</td>
<td>&gt; 1'100</td>
<td>ISO 1974</td>
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</table>
We would like to extend particular thanks to Mr Mendybay Alin, the Chief Designer of the National Bank of Kazakhstan for his imagination and artistic flair in creating the design of The Invisible Man concept banknote. We also wish to thank the National Bank of Kazakhstan for its support of this project and the Banknote Factory of Kazakhstan for the design and production of this concept banknote on its printing equipment including its newly installed five-colour intaglio press. The Invisible Man project represents a successful international collaboration between the designer, the printer, the central bank, the substrate manufacturer and the ink supplier. This Durafor* concept banknote represents the perfect harmony between imagination and innovation; it has converted science fiction into science fact.