Identity
Report

PORTALS

The Role of Furnish in a Secure Passport

Introduction

Passports have infinite worth – they enable us to travel anywhere in the world on holiday or for business. They give reassurance to the authorities in our home and destination countries that we are eligible to travel and our identity is genuine. They are used to prove who we are when engaging with enforcement and verification authorities, unassumingly facilitating our leisure, our trade and our freedom.

The true value of a passport to an individual therefore is undeniable and as a direct result, this humble document is coming under increasing threat. The individuals and networks that falsify passports are growing in number and their approach is becoming increasingly sophisticated and innovative.

When considering how to protect a passport, many issuing authorities will give significant thought to the choice of security features and the layering of these features, but sitting at the very foundation of a passport is the substrate.

As the fundamental cornerstone of the book, the paper and it's furnish should also be given the same high consideration to ensure a passport's strength and security.

History of the Passport

The choice of furnish[1] is perhaps influenced more by the past than current needs or potential.

One of the earliest references to a passport type document was made about 2500 years ago when the King of ancient Persia gave permission for an official to travel to Judah. The official was given a letter addressed 'to the governors of the province beyond the river' requesting safe passage as he travelled through their lands.

Passports in the form that we know and recognise today did not become commonplace until the 1920's. The idea of a world passport standard emerged in the aftermath of the First World War during a conference, organised by the League of Nations, where the 42 founding nations agreed on a set of standards for all passports issued by the members. These were updated in 1947 when the International Civil Aviation Organization (ICAO) took over the responsibility for setting passport standards. To this day, the official standards regarding the quality, style and appearance of passports and photographs are still defined by ICAO.

With the initial agreement of standards in the 1920's, it was decided that the passport would take the form of a 32 page booklet, be valid for 2 years, and be bound in cardboard bearing the name and coat of arms of the country.[2]

Given the requirement for high security, the first papers produced for these passports were supplied by the same paper mills that produced high durability cotton based paper for banknotes.

This historical insight helps to explain why cotton appears in the furnish specifications of so many of the passports across the world today.

1: Furnish is a commonly used term to describe the raw materials used to make the paper. In the case of a passport this may be wood, cotton or a combination of the two.
2: https://biblio-archive.unog.ch/Dateien/CouncilMSD/C-641-M-230-1925-VIII_EN.pdf

Specifying the Right Furnish

The use of cotton in banknotes is still very important because they need to meet very high strength and durability requirements. A banknote must survive the rigours of circulation, folding, creasing and being passed from person to person over several months or even years.

This is not the case for a passport.

Passport paper is protected from everyday wear and tear by the collation of multiple sheets and the book cover. It is normally stored safely by the owner and will only be handled and used for a limited number of times during its life. There is not the requirement for the same degree of durability that a cotton furnish can provide and indeed it could be argued that this is a weakness in such a document.

A passport is faced with many different security threats whereas a banknote is primarily subjected to counterfeiting. Document verification agencies around the world report that falsification or alteration of the personal details page or information on visa pages is far more prevalent than counterfeiting; therefore, passports must provide clear and overt evidence of tampering or ink removal.

In recent years, many of the larger passport issuers around the world have adapted the specification of the paper in their booklets as a result of this knowledge and understanding, reducing or eliminating the cotton content altogether, whilst also improving the book's overall performance and fit for purpose.

It should be noted that many of these passports now contain 100% Chemical Wood Pulp whilst maintaining a ten-year validity, confirming the durability of this substrate over the life of any passport.

The final decision on substrate specification remains firmly with the passport issuing authorities. They need to select the optimal furnish best suited to their passport needs and requirements. A full understanding of how the furnish can impact the characteristics of the paper before a substrate's specification can be defined is very important.

Although Portals recommend that 100% woodpulp is used for passport papers we appreciate that some customers may require cotton content because their particular specifications may demand it. Portals also recognise that changing the specification for an established passport paper is not an easy task for some customers. In such cases, Portals has the ability and capacity to add cotton as a customer requires.

How does Furnish Enhance Security?

Portals are seeing a growing trend to move towards a 100% wood pulp furnish or a blend with wood pulp as the predominant constituent for passport substrates. This brings several advantages, including an opportunity to enhance the security of the passport.

Watermark Clarity

A mould-made watermark is recognised as the most secure, but its presence alone is not the solution. It must have high clarity and be easily recognised. This is best achieved with the shorter fibres of wood pulp.

Our relationships with border force authorities around the world tell us that the watermark remains the first point of reference when questioning the validity of a passport and therefore, public recognition, along with easy of understanding and familiarity are crucial factors. The easier it is to see, the easier it is to verify.

The furnish is highly relevant to the clarity, detail and tonality of the watermark. In short, paper is made from the intertwining of cellulose fibres into a continuous sheet. When producing a high quality watermark, shorter fibres allow for greater tonal variation and therefore intrinsic detail. In this respect, wood pulp allows papermakers more scope to achieve detailed watermark clarity and therefore, enhanced security.

As a final note on this point, the watermark created by the cylinder mould process is recognised as being the most secure available and despite developments in counterfeiting techniques, the three dimensional multi-tonal watermark remains virtually impossible to replicate. The effectiveness of cylinder mould watermarking clarity is justified by Interpol's recommendation to include the feature in a passport because the clearer and more identifiable is the watermark, the harder it is for the counterfeiter to replicate.

Fragility is strength

If the personal or issuance details of a passport have been altered, this should be easy to identify from the disturbance of paper fibres at the site of the alteration. The shorter fibres of wood pulp are less tightly bonded within the paper and more easily disturbed.

Document fraud experts state that the most common forging technique is to alter a genuine passport.

Usually the personal details such as the image of the holder or the passport issuance details are the prime point of attack. The original data is removed by physical or chemical ablation to be replaced by a new image or data.

Other modes of altering a passport include removing a visa to be reused elsewhere or alteration or removal of an ink stamp to amend a travel history.

The paper therefore needs to evidence the damage or disturbance of fibres that occurs when a forger attempts to remove or amend anything on or within the paper.

The shorter the fibres within the paper, the more damage is evident to the surface of the sheet and the more obvious any tamper becomes.

Environmental impact

Wood pulp is more environmentally stable than cotton, making it the material of choice for the more environmentally conscious buyer.

In a world where our environmental footprint is of increasing concern, we see customers paying closer attention to this.

Tenders are including more requirements aimed at helping buyers to understand the environmental impacts of their choices.

Cotton, while a by-product of the textile industry is deemed to be more harmful to the environment than the managed growth of hard and softwood trees.

Wood pulp today is widely available from accredited sustainable sources with high levels of traceability and assured, high-quality supplies.

Cost stability

The stability of costs for wood pulp versus cotton makes it more attractive in the long term.

Through our long history in sourcing both cotton and wood pulp, we know that wood pulp is more cost efficient and is readily available. This creates an environment of stable pricing.

Historically cotton in its raw form has experienced a wide fluctuation in raw material cost.

The lower and more stable costs for wood pulp allows a more confident approach to multi-year pricing, which is often the requirement for passport contracts.

Furnish blend

With the inclusion of wood pulp to the furnish, paper manufacturers are able to delicately control and balance this blend to ensure both durability and exceptional watermark clarity are met.

When we refer to wood pulp, we are in fact talking about a blend of hardwood and softwood fibres – each with their own, unique characteristics. Hardwood fibres tend to be shorter and more flexible which help to accentuate watermark details, whereas softwood fibres are longer, enhancing paper strength and durability.

This ability to control the ratio of fibres in wood pulp allows the paper maker to meet the specifications necessary for most security paper-based products, all of which have differing use cases and life expectancies.

3: Interpol Resolution No.3 (1969) and Interpol Resolution No.9 (1977)

Conclusion

Although cotton is deemed to have significant strengths, the original requirement for cotton to be included in a passport book tends to be based upon a historical approach where the specification of passport papers simply followed in the footsteps of banknote manufacture.

However, in today's world the threats to a passport differ greatly to those of a banknote and as a result, the security feature set and furnish requirement has evolved and continues to require innovation and adaptation to tackle these threats.

The easier it is for a document examiner to confirm the authenticity of a passport, the more secure it can be deemed to be. The passport is a document that faces many threats, but most can be identified if security and tamper evidence are paramount in their specification.

Cotton	Wood Pulp
Durability	Tamper evidence
Strength	Watermark clarity
History	Sustainable

At Portals, our expert paper makers and passport specialists are ready and waiting to discuss all these aspects with you in more detail to define the right high security paper furnish solution for you, your issuing authority and all your specific passport needs and requirements.

About Portals

We have been keeping the same promise to the world for more than 300 years. A promise to help keep a country's economy secure and a person's identity safe.

A market leader in security features, our three specialist sites across Europe have the capacity to produce more than 16,000 tonnes of high security papers and over 3 million km of security threads and foils.

We enable the production of more than 25 billion banknotes, 70 million passports, 60 million certificates, and 200 million brand labels each year, for use in more than 100 countries around the world.

Trusted by our clients to make inspiring, beautifully designed and secure products that last – delighting our customers with our technical knowhow and specialist expertise.

Portals is proud to be one of the only paper manufacturers in the world with a mill dedicated to producing passport, certificate, voucher and other high-security papers on cylinder mould machines. Based in the beautiful location of Bath, we are proud to say that we are a zero waste to landfill site and hold the PEFC – Chain of Custody accreditation (Programme for the Endorsement of Forest Certification Schemes) supporting sustainable manufacturing.

Our reports

This report is part of Portals' dedication to supporting our partners and driving industry innovation.

Our series of reports share best practice from within the industry and offer the latest advice and insight to help you select and adopt secure papers to meet your requirements.

Contact us

If you would like to discuss any aspect of this report further please contact us at **info@portalsinternational.com**

Alternatively, if you'd like to find out more about Portals please visit us at: **portalsinternational.com**

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